Sustainable Tourism Planning and Cross-Sector Partnerships in Small-Scale Fishing Communities: Prospects and Challenges for Viability in Ría Lagartos Biosphere Reserve, Mexico

by

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Author’s Declaration

I hereby declare that I am the sole author of this thesis. This is the true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that the thesis may be made electronically available to the public.

Abstract

The unique biodiversity of the Ría Lagartos Biosphere Reserve, located in Yucatan, Mexico, is characterized by abundant mangroves and a very large marine fauna, like birds (e.g., Caribbean pink flamingo, pelicans, and frigatebird), reptiles (e.g., hawksbill sea turtle and green sea turtle) and fish (e.g., red grouper, octopus, spiny lobster, snapper, and shrimp). The reserve was established in 2004 and it is considered of intrinsic and economic value in Mexico and in the world. Ría Lagarto's ecosystems provide a variety of resources viable for different activities, such as fishing, salt extraction, agriculture, livestock, and tourism. Fishing has historically been a key component of economic development in Yucatan's coastal zones and the towns surrounding Ría (El Cuyo, San Felipe, Río Lagartos, and Las Coloradas). Similarly, tourism has emerged as one of the region's most important sectors in recent years. The flamingo nesting season in the salt pink lakes of Las Coloradas attracts tourist's attention every year. Visitors can also choose from a variety of activities including bird watching, fishing, visiting crocodile farms and temples, boat tours, kayaking, canoeing, paddle boarding, hiking, among others. However, tourism practices have been causing economic, environmental, and social issues in the region. The small-fishing sector, in particular, has been significantly affected.

Sustainable tourism promotes local and regional development, by integrating the various activities that are carried out in a geographical space, keeping these in harmony with the care of the environment. Additionally, there are different tourism subniches and projects that can be developed in different contexts. Thus, this research examines ways to carefully plan and find viable options for tourism and small-scale fishing communities and prevent economic, social, political, and environmental pressures in San Felipe, Río Lagartos, Las Coloradas, and El Cuyo. I specifically aim to: 1) to examine and understand the extent of tourism and the nature of the small-scale fisheries; 2) to critically analyze the key contributions and adverse impacts resulting from tourism practices in the area; 3) To explore strategies for successful community-based tourism planning to make a transition from vulnerability to viability in Ría's communities.

I elaborated my research based on a case study approach, following a pragmatic paradigm, and using mixed methods with quantitative and qualitative data extracted from secondary literature review. I draw on fisheries management schemes, planning and tourism

frameworks, as well as past, current, and future sustainable and community-based government plans. This work identifies challenges and presents possible opportunities through the lens of planning strategies and sustainable development. My research reveals insights on the benefits of strategic planning considering the cultural identity, key strengths, the traditional activities, and main sectors (fishing and tourism), as well as new possible economic trends and markets in the region.

Keywords: small-scale fisheries, socio-ecological system, tourism, strategic planning, community-based management, economic development, sustainability, stakeholders, partnerships

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List of Abbreviations

SSF- Small Scale Fisheries

RLBR- Ría Lagartos Biosphere Reserve

YP- Yucatan Peninsula

UNESCO- The United Nations Educational, Scientific and Cultural Organization

RAMSAR- The RAMSAR Convention on Wetlands

V2V- Vulnerability to Viability

I-ADApT- Community-Embedded Application

FARNET- Fisheries Areas Network

FLAGS- Fisheries Local Action Groups

SES- Socio-Ecological System

SDG's- Sustainable Development Goals

UNWTO- World Tourism Organization

CINVESTAV- Center for Research and Advanced Studies of the National Polytechnic Institute

SEFOTUR- Yucatan Tourism Development Secretariat

CONAPESCA- National Commission of Aquaculture and Fishing

CONANP- National Commission of Protected Natural Areas

CED- Community Economic Development

LED- Local Economic Development

CHAPTER 1

Introduction

1.1 Problem context

The unique biodiversity and landscapes of the Ría Lagartos Biosphere Reserve region are characterized by abundant biodiversity and economic relevance. The region encompasses mangroves and a very large marine fauna, like birds (e.g., Caribbean pink flamingo, pelicans, and frigatebird), reptiles (e.g., hawksbill sea turtle and green sea turtle) and fish (e.g., red grouper, octopus, spiny lobster, snapper, and shrimp) (National Commission of Natural Protected Areas). The reserve was established in 2004 and it is considered of both intrinsic and economic value in Mexico and in the world (UNESCO, 2007). Just in 2020, there was an estimated landing value of 11.6 $US million, equivalent to 4, 529 tons (Coronado et al., 2020). The place serves as a biodiversity hotspot, particularly with the flamingo nesting in the salt pink lakes, which attracts tourists' attention every year. Moreover, Ría Lagarto's wetlands ecosystems (e.g., mangroves, small estuaries, coastal lagoons, marshes, and savannah) provide a variety of resources viable for different sectors and activities, such as fishing, salt extraction, agriculture, livestock, and tourism (Daltabuit Godás et al., 2007; Diaz, 2010).

Figure 1.1: Ría Lagartos Biosphere Reserve Entrance Sign (CONANP)

Over the last five decades, economic opportunities have been blooming at a regional level, due to the introduction of Cancun to the international tourism market (Daltabuit Godás et al., 2007; Diaz, 2010). Fishing has historically been a key element to the development of Yucatan's coastal zone and Ría's towns, including El Cuyo, San Felipe, Río Lagartos, and Las Coloradas, serving as one of the main sources for local livelihoods (Díaz Yarto, 2010). In a similar way, ecotourism in the area has developed as one of the main economic income alternatives for Ría's communities (Salas et al., 2006).

The tourism sector, particularly the nature-based tourism niche, is a key option for the diversification of income generating activities in Ría's communities and other regions in the world. However, if it is not well planned and managed, it can generate economic, social, political, and environmental pressures in the communities. In small-scale fisheries, tourism policies have considerably affected the artisanal fishing sector by marginalizing the participation of fishers and not effectively addressing the problems they face. This happens mostly due to the lack of inclusive and sustainable plans, policies, and management strategies that promote sustainable tourism practices and supporting the fishing sector (Fraga, 2006) .

Moreover, the interaction of fishing and tourism, the combination of the other activities previously mentioned, and the complexity of the reserve's social-ecological system itself, have caused both positive and negative trade-offs. Some of the negative outcomes are related to pollution, irregular water flow and habitat disturbance, as well as overfishing, livelihood loss, inequality, fisher's marginalization, land use conflict, and loss of traditional fisheries knowledge (Daltabuit Godás et al., 2007). Furthermore, natural disasters and climate change effects, such as hurricanes and flooding, constantly threaten to the region adding pressures to the fishers every year, by putting at risk their boats and houses as well as community infrastructure (Salas, Chuenpagdee, et al., 2011), and health. The reserve is in a high-risk zone due to its location in the middle of a trajectory of hurricanes that generally originate in the Caribbean and Atlantic (Díaz Yarto, 2010).

Figure 1.2: The town of Rio Lagartos after hurricane Delta in 2020 (https://www.poresto.net/yucatan/2020/10/7/delta-deja-sin-electricidad-rio-lagartos-216499.html)

Nevertheless, the communities have found ways to cope and adapt to these pressures with short-term solutions, such as livelihood diversification, community partnerships for tourism and conservation and immediate post-disaster action plans (Salas, Bjørkan, et al., 2011). These responses have been taking place at the local level, but in some cases, they have found government support.

Tourism has increased since Ría's recognition as a UNESCO Reserve and as a Ramsar Site, as well as its proximity to Cancun. Nowadays, tourism in Ría revolves around gastronomy, lodging, ecotourism, and fishing trips, with both national and international visitors. This has caused both positive and negative effects. Negative effects include pollution, habitat disturbance, poor integrative planning, lack of training and failure on following eco-standards (e.g., tourism procedures, fishing practices), lack of vision for partnerships (e.g., strategic initiatives among the different groups in the region with conservation and wellbeing outcomes), conflicts among the different participants offering tourism services, and pressure to other existing sectors of the area, such as fishing (Daltabuit Godás et al., 2007). Similarly, existing pressures in the fishing practice of Ría are related to the limited small-business growth for fishers and work benefits, lack of training, unsustainable fishing practices, habitat disturbance, environmental degradation, and conflicts among fishing groups about the use of resources and payment.

Generally, tourism has been recognized as a potential tool for sustainable development if carefully planned. Several developing countries have embraced it as a path for economic development and a driver for conservation strategies. Ecotourism focuses on the protection,

conservation and sustainable use of natural, cultural, archeological, architectural, and other resources that generate economic benefits, in a context of respect, equality, equity and citizen participation. Ecotourism if a driver for both local and regional development by promoting tourist activities by supporting its environment (Megan Epler Wood, 2003).

Fisheries-related tourism is a novel proposition for both coastal and inland destinations. This niche embraces local communities as a main source of attraction, where local events and locally produced products serve as the main attractions for tourists. Furthermore, fisheries-related tourism can be seamlessly combined with niche tourism "products" that define a variety of coastal and maritime destinations, including nature-based tourism and ecotourism, food tourism, and cultural landscape tourism. Fisheries-related tourism will enhance these experiences by encouraging local fisheries, communities, low impact movements and environmental awareness (Chen, 2010; Chen & Chang, 2017; Emily H. Young, 1999; Lai et al., 2016; Nicolosi et al., 2016; Piasecki et al., 2016). One example is pesca-tourism, in which visitors offer tourism-recreation activities to explain their work to visitors (European Commission. Directorate General for Maritime Affairs and Fisheries., 2014). While there have been some efforts towards integrating nature-based and fisheries-related tourism, results have not been effective: creativity and innovative strategies are thus needed to maintain integrated competitive advantages.

Past and current governance decisions in Ría are mostly oriented towards building capacity and social capital. Inhabitants have somehow established informal agreements about the use of resources and how to overcome challenges as a community. At the same time, different tourism and conservation policies have been put in place by the government (Finkbeiner, 2015; Salas, Bjørkan, et al., 2011).

The Yucatan government has aimed to reduce the economic effects on fishing families during times of seasonal closures by offering alternate options for livelihoods diversification. Strategies are mostly linked to the promotion of tourism, which has helped to alleviate economic pressures among fishers and their families. One example is the "Festival de la Veda" (Closing season festival) that takes place during February and March during the grouper closing season. This festival allows families in economically fragile situations by promoting tourist and recreational activities offered in the state's main ports. Different service providers, public

institutions, and private initiatives support and activate the economy of the Yucatecan coastal communities.

Figure 1.3: Festival de La Veda Flyer 2020 (Government of Yucatan)

Thus, diversification and complementarity between tourism and fishing, among the other activities in Ría, have become a key factor in enhancing livelihoods for the communities. However, government efforts so far have been targeting one specific activity. In Ría, as in other regions of Yucatan, tourism is considered a key activity to promote, causing some unbalanced lack of support in other sectors. Overall, greater integrative planning efforts and wiser use of resources are needed (RAMSAR, 1989, p. 7).

1.2 Purpose and Objectives

My research provides an opportunity to reflect on options for viability for small-scale fishing communities of Ría Lagartos, Yucatan. The primary motivation for this research is to investigate

options for transitioning from vulnerability to viability and contributing to sustainable and viable economic outcomes, with tourism and fishing serving as key drivers. As Berkes (2001) recommends, new approaches for small-scale fisheries need to be creative and innovative, with new concepts, tools, and methods to be applied in revised management and conservation practices. Some of these strategies include (Berkes, 2001, p. 226):

- No more marginalization of small-scale fisheries
- Fisher's participation in decision-making and acknowledging their contributions
- The fight towards food security and poverty
- Effective management of socio-ecological systems integrating peoples focus

In this view, the research objectives of this dissertation are:

1. To examine and understand the extent of tourism and the nature of the small-scale fisheries in Ría's communities (El Cuyo, San Felipe, Río Lagartos and Las Coloradas)
2. To analyze the key contributions of and adverse impacts from tourism practices on Ría's communities
3. To explore strategies for successful community-based tourism planning for fostering a transition to viability in Ría's small-scale fishing communities

1.3 Literature Review

The literature review of this thesis explored four different main research domains: 1) Vulnerability to Viability in the context of Small-Scale Fisheries, 2) Sustainable Development and Responsible Tourism, 3) Planning and Community Economic Development, and 4) Cross-sector Partnerships and Governance. Chapter number 2 integrates various theoretical frameworks to understand the transdisciplinary links between these topics and its specific fit in the case study of this research.

1.4 Methods

Due to the COVID-19 pandemic's uncertain travel conditions and research limitations, this thesis is primarily based on a literature review as a research methodology, following a pragmatic paradigm. Methods included the use of the Community-embedded application of IMBER I-

ADApT from Vulnerability to Viability (V2V): Global Partnership for building strong Small-Scale Fisheries Communities, the FARNET Guide Framework for Fisheries Local Action Groups (FLAGs) (European Commission. Directorate General for Maritime Affairs and Fisheries., 2014), and community-based planning frameworks. Publications from key scholars in the fields of socio-ecological systems and fisheries, tourism planning materials, and recent state development plans and policy documents were consulted. Furthermore, various guidelines and models were used to create a profile of the study area and assess the key aspects of vulnerability of small-scale fishing communities as well as potential opportunities to be explored. The third chapter will provide a more comprehensive overview of the approach used in this research.

1.5 Thesis Structure

In this thesis, I present an analysis of RLBR communities that have historically depended on small-scale fishing and its interaction with different activities that emerged years later, particularly in the tourism sector and leisure contexts, including the pressures that arose from them. I expand on different approaches to evaluate strategic planning, where I consider opportunities for tourism and for integrating creative management practices, while also evaluating the current regional government's policies. Overall, the objectives of my research aim to provide a perspective of what needs to be done in the small-scale fishing communities of Ría Lagartos to transition from vulnerability to viability and to contribute to sustainable economic outcomes with tourism as the main driver.

The fours main research domains included in the literature review on Chapter 2 describe concepts of sustainable development, conservation, tourism, and community-based planning. Chapters 3 and 4 of this research provide an overlook of Ría's development since the first settlers arrived at the region, the beginning and characterization of the fishing practice, and how tourism started to take place. Furthermore, they address how tourism has led to different outcomes by accounting for its complex interactions with other activities. Objective 3 explores strategies for successful community-based planning for achieving viability in Ría's small-scale fishing communities with tourism and fishing as the main drivers.

Chapter 5, based on the third objective, presents new approaches to sustainable development – including conservation, tourism, and community-based planning. This chapter

analyzes how the fishing sector fits into tourism in this specific area, and what market niches are available between both activities that can integrate more local participation.

In Chapter number 6, I present a summary of the findings, conclusions, and recommendations. I also explain how these findings can be applied to other small-scale fishing communities and tourism environments with inter-related characteristics.

CHAPTER 2

The Integration of Fisheries-Related Tourism, Sustainable Development, Conservation, and Community-Based Planning: A Literature Review

2.1 Introduction

Ría's communities have been facing different problems and challenges due to the complexity of the region and the different activities taking place. Decision-making has been developed mainly towards environmental outcomes with poor attention to social aspects. This situation is also common in other countries, where there is a general lack of integration between conservation policies and human dimensions. The integration of traditional and local knowledge brings up the opportunity to establish long-term relationships with communities, which leads to building more accountable infrastructure, gather key information to identify local factors of importance, and to effectively listen and address the needs of local communities (Fraga, 2006).

Such is the case of Holbox island, where the latest efforts on establishing sustainable practices, particularly local collaboration, helped determine that small-scale fisheries exploitation led to the decline of resources over time. This case study demonstrates the urgency to identify policy gaps and create holistic tourism management plans tailored to the issues of this town, with sustainable strategies to mitigate resource exploitation (Rubio-Cisneros et al., 2019).

Wherever there is room for development, an analysis of possible viable solutions should be developed. Efforts should not be focused on only one approach or goal. New development strategies should be based on a variety of possibilities, focusing on a region's strengths and learning to harness them, by considering a community's history and by implementing integrative planning approaches that combine the role of institutions and the voice of local communities.

The following diagram describes my proposed workflow for this thesis. The literature areas and frameworks reviewed in this chapter are part of point number 4.

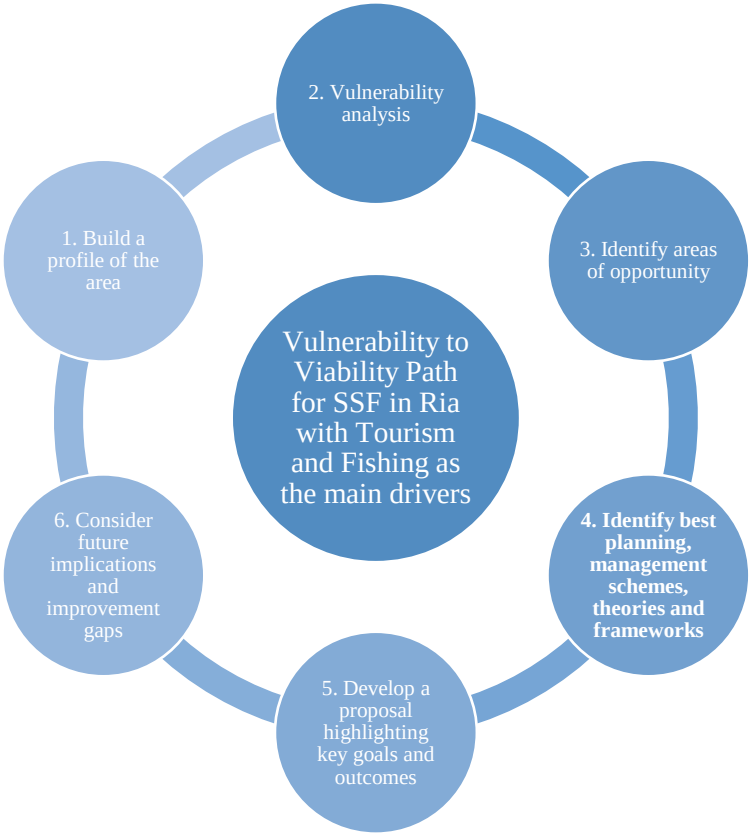

Figure 2.1: Research Workflow of this Thesis

Note. The methodology of this research will be explained in the next chapter.

The four key concepts are:

1. Vulnerability to Viability in the context of Small-Scale Fisheries
2. Sustainable Development and Responsible Tourism
3. Planning and Community Economic Development
4. Cross-sector Partnerships and Governance

This review will not focus on providing separate definitions, rather comprehensive and interconnected analysis of these sectors and disciplines is presented, along with a short overview of the case study.

First, I explain the significance of the complexity of fisheries social-ecological systems. Every SES has different characteristics, pressures and interactions and it is necessary to carefully analyze their specific contexts to formulate more effective solutions. Within this section, I describe concepts related to vulnerability and viability in the context of small-scale fishing communities (e.g., resilience, vulnerability, coping, adaptation, among others). Second, I illustrate the need to transition for vulnerability to viability in communities that are facing challenges, and key aspects to consider helping this transformation take place. Third, briefly overview existing conditions and threats, as well as coping strategies in the fishing communities of the state of Yucatan.

Subsequently, I present the concepts of responsible tourism, sustainable development, and community economic development as key to boost the economy, enhance livelihoods, and strengthen communities in different coastal scenarios in different countries ((*Ecotourism Policy and Planning*, 2003; Megan Epler Wood, 2003). Further details of these policies will be presented in chapter number 5. Finally, I analyze the role of cross-sector partnerships and governance in coastal planning to promote collaboration among different parties and create better strategies. In this section, the pesca-tourism niche and the FARNET guide are presented as viable options in small-scale fishing communities and the study area of this research.

Table 2.1 shows the four literature areas reviewed for this research, the key concepts and terms explored, and its main authors and sources.

Table 2.1 Overview of the Four Literature Areas Reviewed for this Research

Literature Areas	Key Concepts and Terms Searched	Main Authors and Sources
Vulnerability to viability in the context of small-scale fisheries	Threats, pressures, resilience, coping, wellbeing, livelihood capitals	(Nayak et al., 2014) (Jentoft & Midré, 2011)
Sustainable development and responsible tourism	● Tourism, ecotourism, fishing, management, community, sustainable development, resources, local, policies / ● Mexico, Latin America, fisheries, tourism sector, government plan,	(Anup K. C. ED1 - Leszek Butowski, 2016) (Drumm et al, 2005) (Masud et al., 2017)

	sustainable development, community-based management.	
Planning and community economic development	Local development planning, strategic planning, tourism, coastal, innovation, management	(Garrod, 2003) (*Ecotourism Policy and Planning*, 2003) (Agardy, 1993)
Cross-sector partnerships and governance	Fisheries-related tourism, Pesca tourism, blue economy, community, strategies, stakeholders	(MacDonald et al., 2019) (Clarke, 2011)

Note. The relevance of these core areas is based on how they help to find innovative strategies and viable solutions in different communities.

* Tourism has been an extensively researched field in different urban and rural scenarios. Sustainability, cross-sector partnerships, and vulnerability are relatively young fields with also a good number of studies, but still expanding on specific subjects and contexts.

*A more detailed overview of the search process will be explained on chapter number three.

2.2 The Social-Ecological Perspective in Small-Scale Fisheries

Socio-ecological systems are ecosystems that are delimited by spatial or functional boundaries and encompass different contexts. These systems are complex duo to different factors, and they respond to pressures and changes in different adaptive ways (Berkes et al., 1998). Its complexity is also determined by the human societies that are embedded in them and their activities. The concept derives from the recognition that the components and processes of ecosystems are strongly influenced by the processes that occur in social systems and vice versa. The quality, availability, and management of ecosystem services, strongly influence the livelihoods and well-being of coastal communities (Hicks et al., 2015; Nayak & Berkes, 2011).

Aside from its importance in terms of biodiversity, the coastal zone's richness and significance are extremely valuable and diverse. Oceans and coastal areas can have various meanings and values for different people. They provide a wide range of business opportunities for both commercial and artisanal fishers. There are different recreational opportunities for anglers, yachtsmen, surfers, and swimmers; marine resources are also a valuable industrial resource for the energy and logistics sectors. Furthermore, for some communities the shoreline and oceans have meaningful religious significance (Agardy, 1993). The figure below illustrates the components that belong and interact in SES.

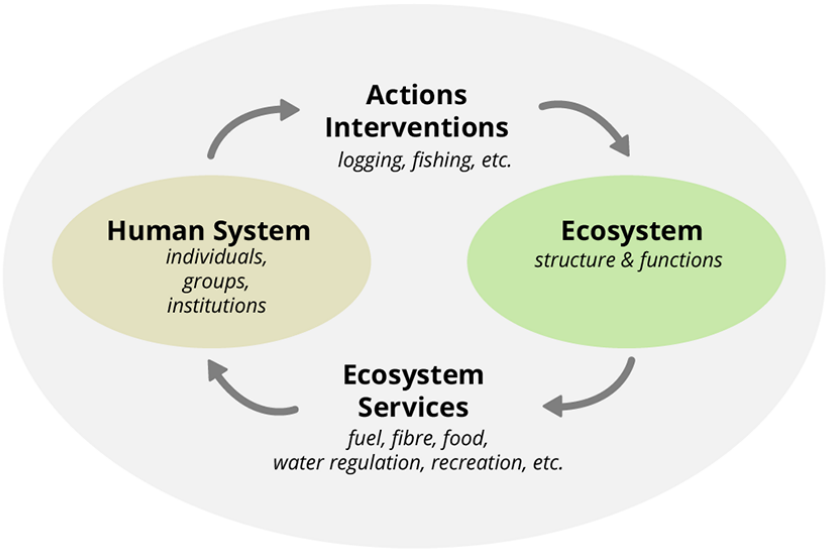

Figure 2.2: The Components and Dynamics in Socio-Ecological Systems (Assessing and managing resilience in social-ecological systems: Volume 2 supplementary notes to the practitioners workbook. Version 1.0 June 2007)

Small-scale fisheries and marine coastal areas are an example of very complex socio-ecological systems, and their needs and conditions are *"*too big to ignore*"* (Jentoft et al., 2011; Jentoft & Midré, 2011). Their extensive biodiversity can provide a variety of ecosystem services and opportunities to different sectors and markets. The resource-richness is part of the livelihoods and recreation activities, such as food, income sources, recreation opportunities, among others. Even if they were to remain a small-sector commercial activities, SSF remain in operation. In fact, SSF have retained their valuable contribution to the nation's economy (Berkes, 2001).

SSF employ millions of people all over the world and they play a key role towards the alleviation of poverty (Jentoft et al., 2011). However, there is a call for action to address issues and pressures to ensure viable solutions. These pressures are mainly caused by climate change effects, and human activities (Berkes, 2001; Chuenpagdee, 2011) which have been consequently causing habitat disturbance, governance challenges, and social and economic issues. There is a need for cooperation not only of decision-makers and authorities, but also from citizens and community-based initiatives.

In this process of understanding the complexity of SES and setting the path for new actions, there are different concepts applied to SES that need to be understood. The three main topics are resilience, vulnerability and adaptive capacity (Adger, 2006; Whitney et al., 2017). The table below summarizes their key definitions. In addition, based on the V2V project, governance and viability are also included.

Table 2.2 Coastal and Marine Socio-Ecological Systems Related Concepts

Concept	Description	Authors
Resilience	"refers to an internal property of a system and specifically its capacity to maintain the status quo in the face of a change, disturbance, or shock"	(Berkes & Seixas, 2005; Burkhard & Gee, 2012; Lebel et al., 2006; Warner et al., 2010)
Vulnerability	"a composite property of the system consisting of three elements: exposure to disturbances, sensitivity to these disturbances, and capacity to adapt to the disturbances"	(Adger, 2006)
Adaptive Capacity	"denotes characteristics that determine whether and the degree to which a system can adjust to survive"	((Manuel-Navarrete et al., 2007)
Governance	"governance is a broad concept that encompasses politics, policies, mutual trust, social knowledge, stages of uncertainty about future outcomes, and voluntary actions that allow individuals to self-organize"	Frey & Berkes, 2014; Walker et al., 2004; Whitney et al., 2017)
Viability	It can be gradually achieved through the different coping, adapting and transformation strategies	(Berkes & Nayak, 2018)

Note. All these concepts are unique in each SES context

The following section examines how the transition from vulnerability to viability can take place in SES and SSF and how multiple factors are part of this process.

2.2.1 Vulnerability to Viability in the Context of Small-Scale Fisheries

Small-scale fisheries are complex and diverse socio-ecological systems with great potential, but strengths must be identified and explored before they can be turned into resilience. There is a need for a greater understanding of vulnerability and a need to work towards building resilience, enhancing wellbeing, and strengthening decision-making capacity (Folke, 2016; Hicks et al., 2015).

Vulnerability is related to the inability of people, organizations, or societies to resist the adverse impacts of various stressors to which they are exposed. Vulnerability realities are not a result of just one factor (e.g., overfishing ---> poverty) and such circumstances are not only faced by one specific sector (e.g., fisheries). As in other scenarios, vulnerability effects, such as poverty or migration, are a result of the unequal and unbalanced access to basic natural, physical, or financial entitlements, the lack of social and human capital, alternatives, resources, power, and action space (Jentoft & Midré, 2011).

Some communities cope under different conditions and stressors, but others struggle to build resilience. Disturbance factors that affect resilience, human communities and their environment can be biophysical, social, economic, institutional, and political (Sardá et al., 2015). Accordingly, when there is no capacity of reorganize after disturbances, there is a loss of resilience (Berkes & Nayak, 2018).

Coping and adaptation depend on how communities respond to past and existing vulnerabilities. Then, adaptive capacity is defined by how a SES is able to positively respond to change (Armitage, 2005; Whitney et al., 2017). Additionally, identifying the qualities and capabilities of SFF is fundamental to co-create transformative and viable solutions with economic, social, and ecologic sustainable outcomes (Berkes & Nayak, 2018; Berkes & Ross, 2013; Norris et al., 2008).

The transition from vulnerable conditions to more viable scenarios will encompass efforts

focused on building resilience to different stressors, creating capitals and new opportunities for the habitants to guarantee their wellbeing. Key participants and decision-makers should explore possible opportunities for the future according to the characteristics of this type of communities and new creative policies should be established. To help them, it is thus necessary to formulate creative and innovative approaches where new concepts, tools, methods, management and conservation strategies are to be introduced to their market. The following table describes four categories of factors identified within five case studies for building resilience from the local perspective in lagoon social-ecological systems.

Table 2.3 Factors Associated for Building Resilience in Marine Socio-Ecological Systems

Learning to live with change and uncertainty	Developing coping strategies	Combining different kinds of knowledge	Creating opportunity for self-organization
Learning from crises Building rapid feedback capacity to respond to environmental change Managing disturbance Building a portfolio of livelihood activities	Nurturing diversity for reorganization and renewal Nurturing ecological memory Nurturing a diversity of institutions to respond to change Creating political space for experimentation Building trust among users Using social memory as a source of innovation and novelty	Building capacity to monitor the environment Building capacity for participatory management Building institutions that frame learning, memory and creativity Creating cross-scale mechanisms to share knowledge Combining local and scientific knowledge	Building capacity for user self-organization Building conflict management mechanisms Self-organizing for equity in resource access and allocation Self-organizing in response to external drivers Matching scales of ecosystem and governance Creating multi-level governance

(Berkes and Seixas, 2005)

2.2.2 Coping and Adaptation in the Fishing Communities of Yucatan

Government efforts across the globe have been implementing sustainable development strategies towards coastal and marine resources and improving livelihoods (e.g., improvement programs for large-scale fisheries, ports development, among others), yet there is a lack of direct investment and other strategies to enhance small-scale fisheries (Berkes, 2001). In addition to these global conditions, extensive research in Yucatan has shown that some vulnerability issues in small-scale fishing communities are caused by overfishing, natural hazards, and social problems. This is mostly because these vulnerability aspects have not been addressed adequately. These factors have decreased the communities' resilience. In terms of inequality and marginalization, not all fisheries has access to good health services, employment alternatives are decreasing, and there is limited access to education (Salas, Bjørkan, et al., 2011). The following table enlists common factors linked to vulnerability in SSF in Latin America and the Caribbean, including two communities of Yucatan.

Table 2.4 Factors Leading to Vulnerability among SSF

Worldwide	San Felipe and Dzilam de Bravo, Yucatan
• Unbalances use of resources • Difficulty to define management schemes • Unsustainable practices (poor incentives, weak governance plans, lack additional income options, poverty) • Inaccurate resources evaluation due to the use of multiple gear and the extraction of different species • Low investment • Intensive fishery resource exploitation processes • Inaccurate catching data collection due to uncontrolled location of landing sites • Lack of employment rights and support • Fishers dependance on loans and bigger marketers	• Lack of work safety among fishers and poor health services • Fluctuations in natural resources due to uncertain conditions • Fluctuations in fish prices • Increasing costs of fishing costs in fishing operation, leading to reduction of fishing days, thus less income • Conflicts and lack of agreements • Difficulty to have or increase their savings

(Salas, Bjørkan, et al., 2011; Salas et al., 2007)

Facing these vulnerabilities, many fishers encounter challenges for their subsistence and decide to explore alternative options for their livelihoods. A study developed in Chilika Lagoon, India, by Nayak (2017) identified subsistence, intensification, extensification, diversification, and

migration changes as common livelihood strategies by fishers and their families. The main activities that are linked to their primary occupation, fishing, including selling fish, entering the dried fish market and aquaculture farms, fishing-boat-related jobs like helpers or offering tours to visitors. There are other activities related to producing and selling products and the participation of women and children in labour. The table below shows the livelihoods diversification activities identified in this study. This area shares similar biodiversity characteristics and conditions as the communities in Ría.

Table 2.5 Livelihood's Diversification Activities in Chilika Lagoon, India

Creating Future Assets for Income Generation	Non-Fishing Occupations	Engage Women and Children In Income Generation
Making orchards Growing vegetables Planting coconut and fruit trees	Selling their plants at home Opening retail shops in the village Requesting daily wage Getting private jobs Rearing cows, buffalos and goats	Engagement of women in different occupations Adolescent children engage in livelihood related occupations

(Nayak, 2017)

While overfishing remains a common practice in the world, the increasing tourism over this type of nature locations has been also leading to anthropogenic transformations and creating new pressures (Rubio-Cisneros et al., 2019). Such is the case of the communities studied in this research. Some of the pressures are related to sustainability outcomes and fisheries rights. The following table lists common factors affecting fisheries in Latin American and Caribbean countries, including Mexico, and coping strategies of two communities of Yucatan.

Table 2.6 Common Factors Affecting the Sustainability of Fisheries in Latin America and The Caribbean, and Coping Strategies in Yucatan

Factors affecting fisheries and sustainability practices		Coping strategies
Latin America and the Caribbean	Mexico	Yucatan (San Felipe and Dzilam de Bravo)
• Fisheries complexities • Resources scarcity and growing demand • Different incentives • Stock fluctuations • Lack of governance structures	• Fisheries assessment and approaches needed for integration • Lack of long-term vision on fisheries management • Inaccuracies in fishery policies and lack of transparency • Use rights not well defined • Interactions between industrial and artisanal fleets and with other sectors • Impact of subsidies on fishing activities	• Trying to increase savings • Diversification (particularly tourism) • Requesting credits and loans • Migration changes • Trying to reduce expenses • Applying for government support programs

(Chuenpagdee, et al., 2011)

Note. More details about the specific conditions of Ría will be further expanded in Chapter 4.

The complexity of the challenges that SSF are facing require strengthening sustainability practices, ensuring conservation, and protecting livelihoods. In terms of livelihoods, diversification plays a key role for the fishers and their families. According to Molina (2013), there are four different diversification types related to research and development, conservation, operations and safety, and tourism. The table below describes them more detailed.

Table 2.7 Fishing-Related Diversification Options

Research and development	Monitoring schemes, research development, and technology innovations
Conservation	Environmental and conservation strategies, including waste management, environmental risk assessment, habitat restoration and promotion of environmental awareness
Operations and safety	Safety and maritime rescue including: the research, promotion, and management of safety operations management and maritime environment
Tourism	Tourism, such as fishing or marine tourism, including Pesca-tourism

(Molina, 2013)

In the last years, tourism has been recognized to boost economies under the right guidelines, and it is accepted as a key driver to economic development. Furthermore, its practices can alienate to sustainable development actions (*Ecotourism Policy and Planning*, 2003; Sert, 2017). Its long-term benefits will depend on understanding the nature of tourism and its relationship with the ecosystem. The following section will review key tourism concepts, the transition to new approaches for more sustainable tourism practices, and key linkages of these two concepts.

2.3 Tourism, Responsible Tourism, and Sustainable Development

Tourism can be defined as follows: "(it) is a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes" (UNWTO). Tourism can offer different products and experiences, based on its two main types: mass and niche. The diagram below summarizes the various types of tourism, their characteristics, and some popular existing niches today.

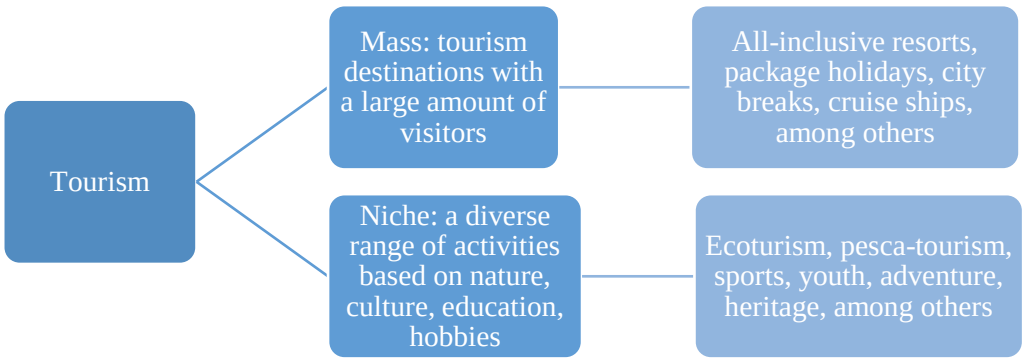

Figure 2.3: Types of Tourism, Characteristics, and Niches. Note. Adapted from Sert (2017)

To complement these concepts, the diagram below presents key drivers of change in tourism and the introduction of new sustainable principles.

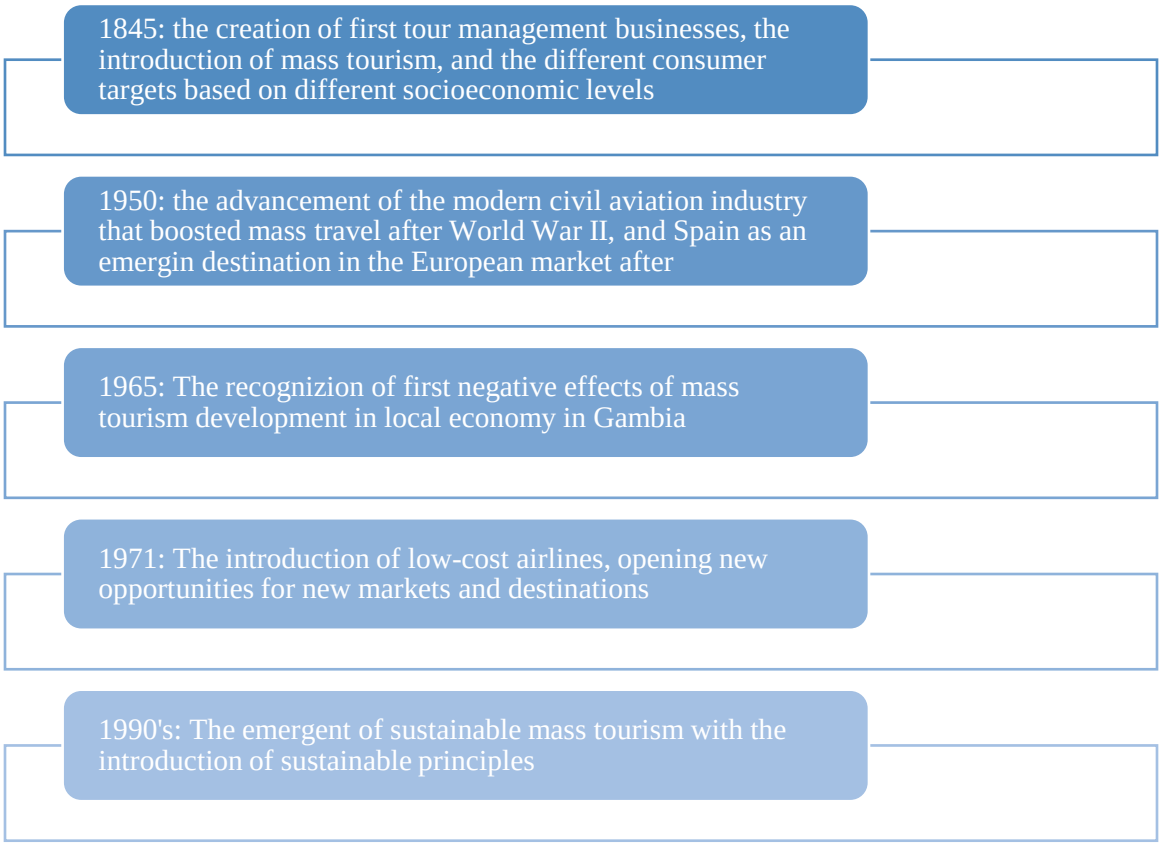

Figure 2.4: Historical Transitions in Mass Tourism. Note. Adapted from Marson (2011)

* In the 1990's, the trends in tourism started to change, due to consumer behaviors in the post-industrial world (Arva & Deli-Gray, 2010).

The concept of Sustainable Development has been extensively explored over the last decades. Sustainable development requires the commitment to recognize our role as part of a complex ecosystem by considering the long-term impacts of our actions (Elliott, 2012). In 2015, the 2030 Agenda for Sustainable Development set out 17 Sustainable Development Goals that aim to address economic, social, and environmental issues, enlisted in the figure below.

Figure 2.5: Sustainable Development Goals (United Nations)

The agenda proposes a common and universal commitment for sustainability. However, since each country faces specific challenges, they must act according to their capability, resources, and economy. Also, these goals are addressed differently according to the sectors and SES where they belong. The figure below illustrates how SDGs can be applied and contribute in ocean and coastal zones.

Figure 2.6: Sustainable Development Goals in Coastal and Ocean Zones (OCEAN University initiative)

This approach questions the current tourism practice globally, focusing on the effects of mass tourism (Torres-Delgado & López Palomeque, 2012) . International mass tourism, despite the great economic benefits it offers, is currently being considered an unsustainable practice, due to its unbalanced profits among participants, rapid development, and environmental impacts (Ruiz-Ballesteros, 2011; Wearing & Neil, 2009). Consequently, in recent years, some countries have chosen to bet on the opportunities offered by certain alternative forms of tourism practices.

These new directions have been considered in both in-land and coastal scenarios. Particularly, governments around the world have been trying to transition from mass tourism to a new, more sustainable way of developing this practice. In fact, as other sectors and fields, it is facing global challenges where dynamic growth, climate change, poverty, conservation and safety, need to be addressed (Anup K. C. ED1 - Leszek Butowski, 2016; *Ecotourism Policy and Planning*, 2003; *Ecotourism and Sustainable Tourism : New Perspectives and Studies*, 2012; Megan Epler Wood, 2003).

Different stakeholders and institutions have worked on establishing guidelines for more sustainable practices in tourism worldwide. The International Agenda for Sustainable Tourism state the following main objectives in the aim to promote better tourism sustainable practices:

1. Economic Viability
2. Local prosperity
3. Employment Equality
4. Social Equity
5. Visitor Fulfillment
6. Local control
7. Community Wellbeing
8. Cultural Richness
9. Physical Integrity
10. Biological Diversity
11. Resource Efficiency
12. Environmental Purity

The following table compares the SGD's goals with these objectives.

Table 2.8 Compatibility of the Sustainable Development Goals and the International Agenda for Sustainable Tourism

Sustainable Development Goals	Links	International Agenda for Sustainable Tourism
No poverty	1, 2, 3, 4,7	1. Economic Viability 2. Local prosperity 3. Employment Equality 4. Social Equity 5. Visitor Fulfillment 6. Local control 7. Community Wellbeing 8. Cultural Richness 9. Physical Integrity 10. Biological Diversity 11. Resource Efficiency 12. Environmental Purity
Zero hunger	1, 2, 3, 7	
Good Health and Well-being	7	
Quality Education	2, 3, 4	
Gender Equality	4	
Clean Water and Sanitation	11, 12	
Affordable and Clean Energy	11	
Decent Work and Economic Growth	1, 2, 3, 4	
Industry, Innovation, and Infrastructure	1, 2	
Reduced Inequality	3, 4	
Sustainable Cities and Communities	11, 12	
Responsible Consumption and Production	11, 5, 6	
Climate Action	11, 12	
Life Below Water	9, 10, 11, 12	
Life on Land	9, 10, 11, 12	
Peace and Justice Strong Institutions	4, 8	
Partnerships to achieve the Goal	1, 2, 8	

Note. Elaborated by author

According to the United Nations Environment Programme (2005), all these elements can significantly lower the impacts of every tourism activity and the environment in which the activity takes place. 42 countries recognize the contribution of tourism to the SDG's if carefully planned. They propose a vision shift in which contributing to the communities is the priority, rather than just focusing on economic benefits. They set the scene for more viable conditions for each of the participants involved to contribute to a more viable future. Complementing the previous table, the figure below illustrates how tourism targets the 17 SDG's.

Figure 2.7: Tourism for SGD's (UNWTO)

Sustainable tourism practices help to create sources of employment and income at a local level (Drumm & Moore, 2005). In the same way, it promotes local culture by stimulating artisanal products and gastronomy. All the related businesses and sub-activities are more environmentally conscious. In the context of coastal and marine areas and small-scale fishing communities, ecotourism and pesca-tourism are the two most relevant subniches of sustainable tourism.

The niche of ecotourism, which is nature-based tourism involving direct interaction with the environment, integrates three dimensions: social, economic, and environmental, by integrating local people's participation, promoting culture, stimulating businesses and addressing conservation actions. Furthermore, it helps boosting regional development, encouraging the creation of new policies by requiring innovative strategies. In addition, it preserves conservation, maintains ecosystem, promotes innovation and knowledge, requires public and private partnership, sets the basis for a community-based organization, improves lifestyle, and supports

equitable development (Bhuiyan et al., 2012). Ecotourism is synthesized in the protection, conservation and sustainable use of natural, cultural, archeological, architectural and other resources that generate economic benefits, in a context of respect, equality, equity and citizen participation.

Ecotourism can be powerful tool for sustainable development and a driver for viability in SSF. However, there are some important challenges to consider because it is highly susceptible to global political, economic, and financial stressors (Lin & Lin, 2006). The planning process should integrate an ongoing interaction and participation of locals, tourism sector professionals, and other key stakeholders. Its strategies must be comprehensive by considering the complexity of the contexts of the locations and their socio-ecological systems. Research suggests that planning strategies for this niche should follow community-based approaches and be tailored to the specific needs of the area and people (Tuğba Kiper ED1 - Murat Özyavuz, 2013). Generally, ecotourism has been recognized as a potential tool for sustainable development, especially when implemented with government participation and, most importantly, community involvement.

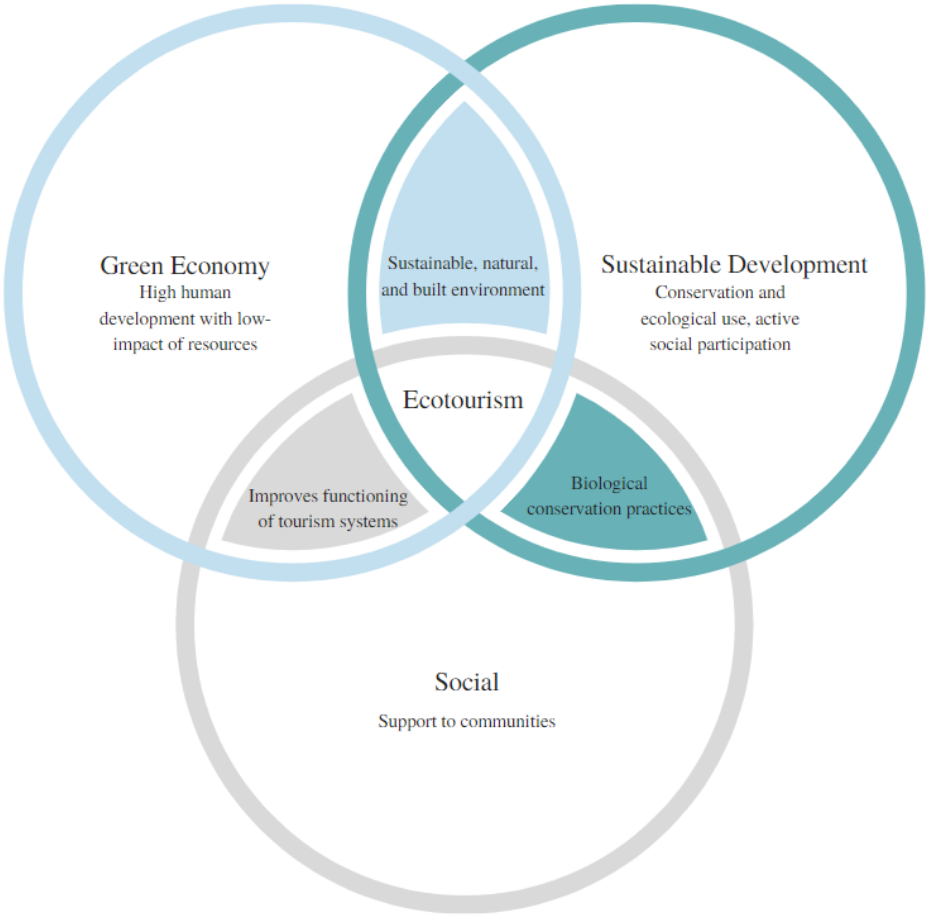

Figure 2.8: Key Concepts of Ecotourism (Birding Farms)

Several developing countries (e.g., Costa Rica, Palau, and Mexico) have embraced it as a path for economic development and a driver for conservation (Tuğba Kiper ED1 - Murat Özyavuz, 2013). Particularly, the island country of Palau in the western Pacific Ocean, has been recognized by its continuous efforts towards more sustainable tourism practices established in their document "Palau's Responsible Tourism Policy Framework and Action Plan". Authorities joined efforts to develop a new strategic tourism plan; rather than supporting mass-tourism and budget-oriented tourism, they are now focusing on markets based on ecology, culture, sports, weddings, and honeymoons. Some of Palau's main values are conservation and resource management, and efforts are being made to share this vision with the visitors (Basilius & Whitman, 2016). In 2017, "The Promise of Palau" was created by the Ministry of Natural Resources, Environment and Tourism. It aims to provide directions for sustainable tourism goals and objectives. This document encourages tourism to respect the island, people, waters, and

ecosystem consciously. This is an initiative that promotes sustainability, but, above all, respect for the natural spaces that are visited. It is a strategy that strengthens and promotes the exercise of responsible tourism that can sustain communities.

In recent years, various professionals, and stakeholders in the fishing sector across different countries, have increasingly recognized fisheries-related tourism activities (pesca-tourism) as a viable opportunity. This activity has enormous potential as a diversification alternative because it creates new sources of sustainable income, stable employment, and it is complementary to extractive practices. Similarly, it promotes more opportunities for dynamic coastal activities (e.g. attracting visitors to the shorelines, businesses, cultural events, parks, among others), which improves the quality of life and promotes economic development in nearshore areas (Molina, 2013).

Pesca-tourism was first established in Italy in the 1990's. The most popular activities include demonstration of basic fishing activities involving tourists' participation, tours, preparation of traditional recipes, and water and land sports activities. The duration of these experiences is different, usually visitors take half or one-day trips. Since its beginning, pesca-tourism has become more popular in European countries and has been key for the economic development of coastal areas (Lai et al., 2016).

Some local tourism cooperatives in Mexico have been also exploring pesca-tourism. Some of the activities include excursions with the fishers and sports fishing tours. Particularly, sports fishing is practiced among 44 ports on the Pacific coast and the Caribbean, 50 water reservoir sites. Over 90 species are catch in this activity (Gómez Cabrera & Boncheva, 2013).

Figure 2.9: Pesca-tourism in Italy and Mexico

Note. On the left, a pesca-tourism boat in Sardinia, Italy, Photo by Chris Laurence, Piasecki et al., (2016). On the right a fisher-guide in San Felipe, Yucatan, Mexico, taken from San Felipe Adventure.

Tourism development can lead to transform places. However, it can cause issues and conflicts within the areas it takes place (Córdoba Azcárate, 2010). One key example is the mass tourism development in Quintana Roo, which has mainly benefited the government and investors, but marginalized the Mayan rural population and failed to balance local and regional development. Rather than helping and stimulating other industries (e.g. agriculture, fisheries, industry, and artisanal crafts), this form of tourism activity has resulted in a threats for the locals and the environment (Torres & Momsen, 2005); particularly, these negative effects are caused by extensive hotels and resorts construction, poor environmental measures, and lack of integration of locals (Hundt, 1996). It is important to consider that local context-based development approaches are key to guide sustainable development and resource management and that, even if the goal is to give more responsibility and empower communities, government support is still required. The following section provides an analysis on how tourism can enhance economic and sustainable development under the right planning approaches in small-scale fishing scenarios.

2.3.1 Planning and Community Economic Development in the Context of Small-Scale Fisheries and Tourism

Planning is a broader concept and can be focused on community, city, regional, transportation, climate action, capital investment or strategy. Regardless of the approach, its main goal is preparing for the future, but this can be challenging. There will always be a need to plan sustainable communities wherever people live, so that they can be guided to social and economic viability while also being environmentally friendly. As mentioned, the collaboration of different decision-makers, related-field professionals, and multi-level stakeholders, including public participation, is necessary. In today's complex communities, planning needs to address the needs and rights of all society members (Planetizen, 2020). Planning in an integrative, more creative, and modern approach allows decision-makers to understand the complex nature of places and cities and address the need for creating sustainable and resilient communities (Multiply, 2020). A planning process should be based on evidence, with a previous economic, social, and environmental assessment. With the participation of local people, one of its main objectives is to prioritize community involvement and stand for social justice (Royal Town Planning Institute, 2015). There are different planning frameworks according to different urban and rural contexts. For the purposes of this research, I will draw on theories linked to strategic planning, community economic, development, fisheries management, and options for community-based tourism.

In the contexts of Sustainability and Climate Change Adaptation, planning is considered a key element to improve the resilience of built environments (Dhar, 2016; Jabareen, 2015; Lennon et al., 2014; Steiner, 2014). The socio-ecological concept of resilience has been integrated into these literature areas. As mentioned in the second section of this chapter, it is about the capacity "for renewal, reorganization, and development [and] to cope with, adapt to, and shape change" (Folke, 2006, pp. 253-254). Resilience is the capacity to adapt and recover from different stressors.

In the context of tourism, the planning process involves research and evaluation, to maximize people's wellbeing and conservation, by integrating economic, social, environmental, spatial, and sustainability aspects, as well as demand-supply market strategies. Spatial and

destination planning play a key role for economic viability and wellbeing, particularly where tailored management strategies are implemented. Spatial planning looks at the aspects of health, economy, the beauty of urban context, and public administration and policy. Some spatial planning mechanisms can be used for analyzing variables and issues from a multi-stakeholder perspective, including consumer trends and behaviours, social impact, economic systems, and land use/zoning characteristics. Other qualitative tools, such as foresight (e.g. scenario-based planning), are helpful to create a common vision with the participation of different policymakers with a more comprehensive approach (Carlisle et al., 2016; Chettiparamb & Thomas, 2012; Cooper & Hall, 2007). Another planning framework developed by McIntosh (1977) with a conscious focus on the location, describes the following goals:

- To enhance the livelihoods of local people through tourism economic revenue
- The creation of infrastructure development and facilities for both residents and visitors
- Tourism-related projects should be appropriate for the location
- Tourism and development programs/schemes/plans tailored to the cultural, social, and economic values of the community and government authorities.

Strategic planning integrates the collaboration and initiatives of public and private stakeholders working together towards the development of a city. This tool allows creating procedures that can promote and guarantee a better life quality, and economic, and social progress (Steinberg, 2005). According to the Royal Town Planning Institute (2015) Some of the general principles about this concept are enlisted below:

Figure 2.10: General Principles for Strategic Urban Planning (Royal Town Planning Institute, 2015)

Managing tourism with strategic planning measures can help to: identify and mitigate negative external factors; coordinate plans for investments; collect shared goals in a medium and long-term vision (Carlisle et al., 2016). According to a case study based on the city Jelenia Gora in Poland by Rapacz & Jaremen (2012), some strategic goals in a tourism planning context can be:

- To achieve a high level of development and economic growth
- To boost social development
- To keep a balance between economic progress and social aspects through the lens of sustainability and conservation

In the context of Small-Scale Fisheries, communities that have been diving into the tourism practice as a way of diversification need to plan strategically the restructuring of management schemes towards community-based strategies, as well as a sustainable and balanced use of commons resources.

Integrating new governance regimes with community-based approaches is key for economic development in fisheries resource management (Berkes, 2001). As there are no straightforward ways to manage fisheries, management planning can take different approaches tailored to the fishing community context with a consensus of different stakeholders and considering other important sectors in the area (Berkes, 2001). Studies have shown that right-based management schemes are suitable for sustainable artisanal fisheries. Interactive learning as a social process will continue to increase. In some places, fishers are starting to be more involved in issues concerning inshore fisheries management and the wider maritime economy as pressures from conservation interests, renewable energy, and marine spatial planning (Garrett et al., 2012).

Tourism planners, government officials, entrepreneurs, investors, and other participants should look at regional communities and join efforts for a more equitable socio-economic development; in addition, they should work to eliminate migration effects and poverty levels and set the path for resilient communities (Torres & Momsen, 2005). The two tables below show some key methodologies and frameworks to consider in small-scale fishing management. They can be integrated in the first steps of planning schemes for the communities and may be tailored according to different contexts.

Table 2.9 Interdisciplinary Methodologies and Frameworks for New Management Schemes in Small-Scale Fisheries

Measures	Insights
Traditional command-and-control	Transition to property rights-based approaches
Ecosystem-based	Can provide alternatives to protect local fish species
Integrated approaches	Solutions for problems within the fishing and other economic sectors
Integrated coastal area management	Can integrate fisheries issues with geographic information systems tools (GIS) and enhance better decision-making

*(*Berkes, 2001)

Table 2.10 New Management Directions for Small-Scale Fisheries

Scientific research and development, "are overwhelmingly directed at rich, country problems… The international system fails to meet the scientific and technological needs of the world's poorest." (Sach, 1999)	The search for new directions should then look at creating alternatives for both types of nations.
"The construction of models whose sole role is that of "positive" prediction, where a scientific theory neither explains nor describes the world" (Corkett, 1997)	Conventional science is not rejected, but it should deal with the real problems of fishery management.
Conventional fishery science management was originally for large, single stock fisheries that use just one type of gear, to assess biological, economic and management aspects. While small-scale fisheries generally have multispecies stock and different types of gears.	New approaches then should require a different type of approach that assesses the different biology and ecosystem aspects, as well as the social context (Jasanooff et al. 1997). Considering: ● Benefits for individual fishers, fleets, fishing households and communities ● Human behaviour towards marine resources ● Management regimes beyond command-and-control measures

(Berkes, 2001)

Furthermore, creating multiple-use zoning regulations in coastal areas can also be an effective instrument when taken in conjunction with integrated management. Multiple-use zoning can facilitate in the analysis and organization of the interactions and linkages between species and habitats in coastal ecosystems. The significance and utility of this planning strategy relies in 2 main points: "(1) it forces planners to think ahead and attempts to quantify present and future social and environmental impacts; and (2) it provides the mechanism necessary to coordinate disparate management measures into a comprehensive framework " (Agardy, 1993).

2.3.2 The Sustainable Development Approach in the tate of Yucatan

Over the last few years, the state of Yucatan has been nationally and globally recognized for its efforts towards a greener and more sustainable economy (Fridman, 2019). Furthermore, government initiatives have progressively managed to overcome extreme poverty, by creating job opportunities for vulnerable groups. These jobs have been based on the promotion of

traditional knowledge and niche markets of the various locations across the state. Particularly, tourism-related jobs have been increasing due to the strength of this sector in the region. However, the development of this sector needs more effective planning and management. Some tourist attractions and rural communities still have low tourism diffusion, there are unsustainable practices and better efforts in integrating local participation are needed (Vila et. al., 2018) . Yucatecans are demanding to authorities that community rights and participation should remain on top of all private interests in tourism and other key sectors of the region.

In response to this, the 2018 Plan de Desarrollo Estatal (State Development Plan) has integrated policies and guidelines based on promoting community participation, enhance livelihoods, and foster economic development with sustainable practices. The core areas of this plan are: inclusive economic development, wellbeing, strengthen, and promote a green and sustainable development, with a rights-based overall objective. Additionally, it has integrated basic principles of common resource management with specific objectives and action plans for a medium and long-term period.

Part of its strategies to boost economic development is strongly linked to tourism in all the towns of the state: “We’ve been working on different programs for decentralizing tourism. We not only have Chichen Itza and Merida, we have 106 different municipalities. We want tourism to become a development opportunity for each one of them. We created different programs in our Maya villages, for example” (Fridman, 2020). The Secretariat of Tourism Development of Yucatan is one of the strongest government ministries in Mexico. Its latest Tourism Development Plan 2019-2024 has integrated innovative sustainable tourism and development strategies. “More than 60 new tourism products have been developed and integrated in the state's six tourism regions, covering market segments such as nature, culture, gastronomy, beach, adventure and "urban premium," among others ” (Yucatan Ministry of Tourism, 2020).

An analysis of this plan regarding the objectives of this research will be presented in chapter 5. Another important aspect to note is that this plan promoted the collaboration among different groups, by the participation of local stakeholders, including community representatives. The following section explores the role of cross-sector partnerships and governance for

sustainable development and tourism planning.

2.4 Cross-sector Partnerships and Governance

Cross-sector partnerships are intensive and long-term interactions between organizations from at least two sectors (business, government, and/or civil society) aiming to address social or environmental problems, by providing clarity about the social roles and responsibilities of multiple stakeholders (MacDonald et al., 2019). Cross-sector partnerships can be key strategies and drivers for sustainable development in tourism planning.

Integrating tourism stakeholders in both public and private sector partnerships can help develop better strategies for tourism destinations and support local development (Carlisle et al., 2016). Nowadays, most tourism professionals believe that the local assets and resources of a specific location are critical to the success of tourism businesses. Local elements (biodiversity, interaction with the locals, immersive culture activities, historic tours, among others) strongly influence the customer's perceptions and satisfaction level that a visitor can experience (Crossland, 2017). Greater collaboration among various parties is required to create more unique and sustainable travel experiences and innovative place-based tourism products. This would also ensure respect and participation of local people. One niche that integrates these aspects is ecotourism.

The World Tourism Organization defines ecotourism as: “nature-based tourism that aims to protect natural areas, promote and enhance respect and preservation of the lifestyle of rural areas”. Ecotourism is a form of tourism, in which travelers experience a unique visit by developing harmonious, conscious, and responsible relationships with the social, cultural, and natural environment that they are discovering. Ecotourism encourages local and regional development by integrating the various activities that take place in a location in a more environmentally responsible direction. Most importantly, it aims to raise awareness of environmental preservation, human rights, and social justice among locals, stakeholders, and visitors (Cox, 1985; Megan Epler Wood, 2003; Tuğba Kiper ED1 - Murat Özyavuz, 2013).

By establishing policies and common goals toward common objectives (e.g., boost economic development, promote culture and collaborative participation, among other), public

administrations and authorities play a critical role in supporting communities and helping to boost competitiveness among destinations. Strategic planning measures led by the government can help to coordinate and integrate tourism infrastructure and investments and lead in view if the community's complexities (e.g., geographic location, needs, and opportunities). Infrastructure development, regulation of activities, land use management, and marketing strategies, are some of the main actions that rely on the public sector (Ryding, 2011; Carlisle et al., 2016). The following table enlists key aspects to consider for strategic planning for different purposes, which in combination with other planning and sector specific frameworks, help to define better planning schemes.

Table 2.11 The Strategic Planning Process

Analysis	Formulation	Implementation	Performance Evaluation
Identifying motivation and interests of various stakeholders involved	Defining long term objectives and guidelines (vision and mission)	Putting resources and activities into effect	Controlling the implementation of the plan

*(*Carlisle et al., 2016)

With this shared participation vision in mind, some countries, including Mexico, have been developing strategies to increase opportunities for small-scale fisheries through innovative decentralization approaches. Government and stakeholders' partnerships can help enhance collaboration, promote inclusiveness, and set flexible strategies to tailor proposals and solutions within specific contexts and conditions. Rather than following past "command-and-control" approaches, new innovations can promote the creation of new alliances, indirect governance schemes, and economic incentive programs. Some of these mechanisms rely on information, consumer demands, and the establishment of values to follow specific desired behaviours (Craig & Ruhl, 2010). However, there are some existing barriers and limitations to implementing this vision. Finkbeiner and Basurto (2015) investigated multilevel co-management strategies and factors limiting this approach in a case study of small-scale fisheries in Northwest Mexico. The following are some of the key factors that have been identified as limiting power sharing with resource users:

- The early phase status of mechanisms to increase fisheries stakeholder participation for decision-making
- When only federal offices were responsible for fishing permitting and licensing
- Lack of transparency and corruption
- A lack of understanding of laws and regulations among fishers
- The challenge to overcome robust and rigid institutions and bureaucracy limitations

Teamwork and effective coordination with transparent decision making should be integrated among various stakeholders and institutions to bring diverse interests, opinions, and suggestions together and address key action lines. A multi-scale stakeholder structure should consider the various key participants in the tourism sector, such as transportation, environmental institutions or community-based NGOs, and labor unions. Decision-makers, travelers, community members, and researchers are also key players (Uran & Juvan, 2010). Their perspectives can shed light on new opportunities for potential tourism sites, allowing to identify major challenges and join efforts. Ideally, these parties would agree on a common vision for a sustainable path where all can enjoy the benefits (Honey, 2008).

Furthermore, Biosphere Reserves play a key role in the creation of partnerships. They encourage local participation in research, monitoring, education, and training. Biosphere Reserves have unparalleled ecological, scientific, and educational value, and in the context of collaborative efforts, they are excellent bridges for the formation of associations consisting of various types of management units (e.g., national parks, research centers, managed forests, and rangelands, and private or public owned areas) (United States Man and the Biosphere Program, 1994).

Based on the precedent aspects, the following successful case studies from other Mexican coastal communities are presented:

- In the northern community of Bahia de Los Angeles, Mexico, the effective implementation of community-based management strategies and different stakeholders' participation has led to successful outcomes. This was possible through the collaboration between different sectors, including the Government (Direction in Baja California of the Flora Protection Area and Fauna Islands of the Gulf of California), academic faculties

(Faculty of Marine Sciences of the Autonomous University of Baja California) and local people, who are continuously working together to regulate the whale sharks ecotourism activities. Their participation has been critical in furthering species research and developing regulations for safer and more sustainable activities (Cárdenas-Torres et al., 2007).

- In Punta Allen, a lobster fishing village near the Sian Ka'an Biosphere Reserve, located in Quintana Roo, researchers analyzed the historical context of the community to understand its social structure. This research showed the positive impacts of spatial planning and institutional organization integrated in fisheries management. Some key findings are:
    - new ways of the social organization included establishing better control over access to common resources among cooperatives
    - the positive responses to socio-environmental perturbations such as hurricanes and economic crisis that led to rearrangement of management schemes
    - the openness to balanced diversification
    - the use of adequate fishing gear
    - the fishing concessions authorizations as a path for better practice measures.

Concessions in Mexico, according to the Fisheries Act of 1999, are one type of fishery resource use. They can be granted up to 60 years based on an evaluation of the results of technical and economic studies and revenue models. Overall, the presence and interest of researchers in the community, as well as an understanding of the historical context for better short, medium, and long-term decision-making, have resulted in positive outcomes (Méndez-Medina et al., 2015).

Some general aspects to consider in Yucatan's communities for better tourism practices are:

- Congruence between tourism and ecotourism goals should exist, taking into account the effects on both social and environmental aspects (Daltabuit Godás et al., 2007)
- higher-level stakeholders should support local tourism groups/associations/cooperatives

- the importance of encouraging community participation and delegation of activities/responsibilities, as well as addressing inequalities
- not assuming that locals will naturally engage in tourism-related services
- how to create innovative management schemes while still considering past guidelines and traditional management frameworks
- maintain sustainable tourism practices despite rising demand
- tourism should not be viewed as the primary activity and should not be prioritized; rather, a balance between all sectors and respect for traditional practices should be encouraged (e.g., not displacing fisheries) (Daltabuit Godás et al., 2007)

Furthermore, it is important to consider the regulations in communities located in Biosphere Reserves and Marine Protected Areas. The table below enlists MPA's guidelines for fisheries protection and the main fisheries-related tourism activities that are monitored in them.

Table 2.12 MPA's Monitoring in Fisheries Communities

MPA's recommendations for fisheries	Fisheries-Related Tourism Activities Monitored
• Provide direct and indirect financial support for fishers and environmental education programs • Tourism training programs and green fees for conservation goals	Diving and snorkeling, boat tours, jet ski and parasailing, fishing, anchoring, aquaculture, spearfishing and dive fishing, fishing

(Lopes et al., 2015)

The success of an MPA is primarily determined by how it is designed and managed to achieve multiple environmental protection and economic growth goals for local communities. (Lopes et al., 2015).

The context presented in this section provides an overview of the significance of analyzing all key aspects: participants, regulations, and interconnected drivers in a community, and how understanding them can lead to more sustainable outcomes in small-scale fisheries and in coastal communities. The following section will investigate specific links between fisheries and tourism, and it will describe the potential for cross-sector partnerships and key niches that can enhance SSF's viability.

2.4.1 Cross-Sectoral Links Between Tourism and Fisheries: Pesca-tourism

As mentioned, pesca-tourism is a combination of tourism and fishing. Its two main goals are to provide alternative income options for fishers facing scarce marine resources issues and to provide innovative tourism services for visitors in coastal areas (Piasecki et al., 2016). The incorporation of this practice in Italy over the last 20 years, has contributed to resilience and long-term sustainability by increasing economic benefits and consequently helping to preserve artisanal fishing practices in Italian coastal communities (Prosperi et al., 2019).

In Spain, its practice as a new product in coastal destinations has acted as a driver for different positive outcomes. First, it has helped to generate fishers' environmental awareness and it increased appreciation for their social value. Second, thanks to an increasing interest in being part of the fishing-tourism-related market, pesca-tourism is becoming a viable route for diversification. The communities have presented improved development when different parties integrate efforts for this activity in a collaborative approach (Padín et al., 2016). In rural communities, recreational fisheries activities have helped to enhance opportunities and development by using their local strengths, knowledge, and particular nature characteristics (Garrod et al., 2006).

One common example of pesca-tourism is angling. In general, whether it is professional or just as an occasional activity, angling can be a good option for local development, including all the tourism activities derived from it (e.g. accommodation and sports and cultural events) (Curtis & Breen, 2017), and its combination with ecotourism activities (e.g. birding, nature study, and activities in terrestrial parks or reserves). Some considerations for angling, when fish is not necessarily eaten, are as follows: (1) the activity makes use of a unique natural resource, (2) it has a unique clientele (3) it is an environmentally responsible use of natural resources, (4) it provides economic support for resource conservation, (5) it can be an economic advantage over alternative uses, and (6) whether it creates direct economic assistance to the local economy (Holland et al., 1998).

Mexico is a country with diverse options for coastal destinations distributed between the Pacific Ocean, the Gulf of Mexico, the Gulf of California, and the Caribbean Sea. In 2017, the arrival of tourists to these locations was more than 35 million, of which 55.3% were national and 44.7% foreign (Secretaría de Turismo SECTUR, 2017). In particular, fishing for sport is very popular. The Mexican water bodies provide plenty of opportunities for anglers, with inshore, nearshore, and offshore trips available (Rhys, 2021(Daltabuit Godás et al., 2007). The figure below shows examples of fishing charters and tours offered in different coastal zones of Mexico.

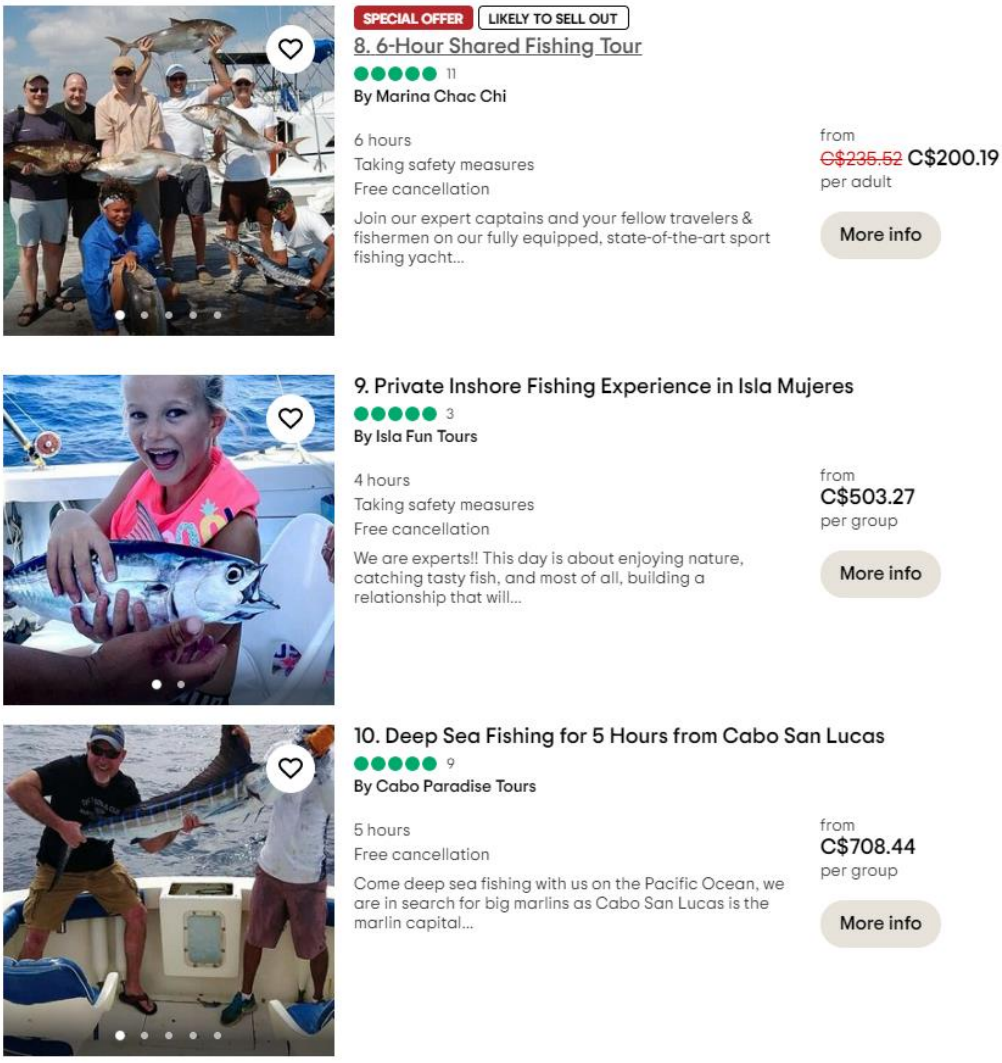

Figure 2.11: Fishing Charters and Tours in Mexico (TripAdvisor)

Apart from sports fishing activities, tourists in Mexico are also looking into more local unique experiences (Daltabuit Godás et al., 2007). Some of them are artisanal fishing methods demonstrations, tours in classic fishing vessels and boats, and traditional seafood dining at the

fisher's homes. These types of activities contribute to traditional knowledge sharing, boosting community empowerment, and promoting cultural sensitivity (European Commission. Directorate General for Maritime Affairs and Fisheries., 2014). There are some existing strategies integrating these aspects for creating tailored projects for fisheries and tourism. One example is the FARNET Guide: Fisheries Local Action Groups (FLAGs), which will be described in the next section.

2.4.1.1 The FARNET Guide: Fisheries Local Action Groups (FLAGs)

The Fishery Local Action Groups strategies are tools that can help promote fisheries-related tourism in a sustainable and economically viable way. Beyond being a very good option for diversification, fisheries-related tourism fosters local fish products commerce by integrating different activities including direct sales for visitors, local restaurants and local events related to the local species and traditional fishing practices. Moreover, fisheries-related tourism plays a key role in development with a variety of functions, it can be a driver to enhance human, environmental, natural, scenic, historical, and cultural resource or to face the different challenges that fisheries communities face (e.g., decrease of fish stocks, lack of competitiveness, invasive species). In general, it is recommendable to focus on innovation strategies and on viable diversification activities (Nicolosi et al., 2016).

The newly created FLAGs (Fisheries Local Action Groups) structures have been integrated into a multilevel governance framework in different locations of the European Union, but their implementation and pathways of schemes highly depend on the area where they are launched. Key characteristics include:

- Different stakeholders collaborate through participatory democracy towards self-management and self-government
- The collaboration between different actors, territories and the inclusion of interests require rearrangements of governance schemes, which often lead to changes in the territory and spatial planning (González & Piñeiro Antelo, 2020)

Fishery planning and management require environmental, social, and economic assessment. This evaluation should include the consideration of multiple sustainability criteria

and preferences and priorities of decision-makers (De Boni et al., 2018). In the Apulia region of Southern Italy, a study identified key considerations for create a Sustainable Coastal Development Plan (CDP). This study used a multiple criteria decision aiding (MCDA) framework among six fisheries' local action groups (FLAGs) taking into consideration the following points as potential policy implications:

- Better funding distribution and project development when strategies are based on local environmental, social, and economic aspects
- Communities prefer diversification activities when they provide tangible results and fishing remains profitable for them
- The possible negative effects of tourism should be considered in the planning process before implementation. For instance, if tourism is not controlled and exceeds capacities, there may be pressures on the environment, with accelerated uncontrolled urbanization and pollution, and poor water quality
- Encourage more small and medium-scale tourism development in local entrepreneurs
- Promote small-scale fishing activities linked to ecotourism
- Increase interactions between fishers and consumers to promote a better understanding and culture appreciation of local tourism products and offers
- Direct revenue will be used to support artisanal fisheries catch and product enhancement. In larger fisheries, provide marketing training to fishers, and develop product enhancement strategies
- Consider tourism as an additional source of income that helps fishing to remain and improve, rather than substitute it
- The implementation of “short chains” (e.g., baskets of local seafood products distributed among locals and promoting online distribution networks of fishers and fish farmers)
- Diverse and proportional funding distribution among FLAGs projects for better outcomes in fishing communities
- Improving fishing competitiveness will be highly dependent on the various diversification options and alternative job opportunities available in a region
- Establishing well-managed processing facilities can lead to fish product enhancement and a more equal revenue distribution from the primary stages.

2.5 Concluding Remarks

There can be different paths for planning and enhancing economic and sustainable development in small-scale fishing communities. Finding options for their viability will require a complete analysis of the environment and context of the region where they are located, considering aspects of biodiversity, culture, existing laws, analysis of existing problems and situations, and possible solutions. Having a comprehensive profile of the area and establishing clear goals will make it easier to choose management schemes and the best planning framework for its implementation. The diagram below illustrates the rational used for this research, based on the literature areas presented in this chapter.

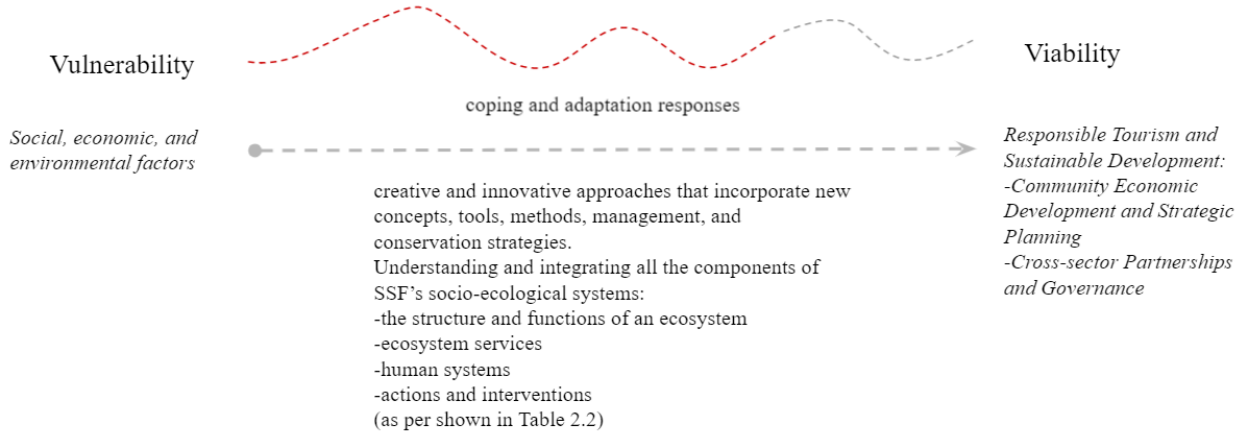

Figure 2.12 Frameworks Used in this Thesis

Chapters 4 and 5 will provide an overview of the existing conditions of the towns that are part of this study, with a particular profile of its fishing and tourism sector, as well as a descriptive data of the Biosphere Reserve that encompasses this region. The frameworks presented in this chapter will be then analyzed based on Ría's context and the characteristics of its socio-ecological system.

CHAPTER 3

Research Area and Methodology

3.1 Overview

I elaborated my research based on a case study approach, following a pragmatic paradigm, and using mixed methods with quantitative and qualitative data based on secondary literature review. The case study approach enables in-depth, multifaceted investigations of complex issues in their real - world contexts (Crowe et al., 2011). The pragmatic paradigm allows to focus on the facts, causes, and drivers of research problems and applying different perspectives to understand it (Mackenzie & Knipe, 2006).

This research addresses the complexity that encompasses the small-scale fishing communities of RBRL (San Felipe, Río Lagartos, Las Coloradas, and El Cuyo), analyzes the fisheries-related tourism activities, identifies challenges, and presents possible opportunities through the lens of planning strategies and sustainable development. My research reveals insights on the benefits of strategic planning considering the cultural identity, key strengths, the traditional activities, and main sectors (fishing and tourism), as well as new possible economic trends and markets in the region.

3.2 Research Aim and Philosophy

The problem statement of my project lies in the pressures that have been generated by the tourism sector in the small-scale fisheries of Ría Lagartos, which are listed below:

- Tourism has had a significant impact on the artisanal fishing sector by marginalizing fishers' participation and creating socioeconomic and environmental pressures. This happens mostly due to the lack of inclusive and sustainable plans, policies, and management strategies that seek to promote and develop ways of community-based approaches (Fraga, 2006; Pinkus Rendón & Pinkus Rendón, 2015; Salas, Bjørkan, et al., 2011; Sofía Arenas Castillo et al., 2016)
- Moreover, as mentioned, the interaction of fishing and tourism, the combination of other activities that take place in the same area, and the complexity of the reserve's socio-ecological system itself is causing social and environmental issues (e.g. unsustainable

tourism practices causing water pollution and uncontrolled solid waste) (Daltabuit Godás et al., 2007; Salas, Bjørkan, et al., 2011; Sofía Arenas Castillo et al., 2016)

- Fishing and the tourism sector are considered as the activities that are still going to remain a key source of livelihoods locally, despite ineffective management. This is because if implemented appropriately, tourism practice and benefits can act as key drivers to enhance livelihoods and conservation (Chuenpagdee et al., 2002; Coronado et al., 2020; Méndez-Contreras et al., 2008; Pham, 2020; Sofía Arenas Castillo et al., 2016)

During my life, I have had the opportunity to visit the northern parts of the Yucatan state and The Riviera Maya. I had the chance to get to know the towns, the main city of Merida, some Mayan ruins, coastal communities, and lagoon areas in a very local and unique experience with my family. The traditional food, the boat tours, driving in the core of the Mayan region, buying artisanal handicrafts, and stepping into Mayan places are crucial parts of my memories and travel experiences. Most of the time, we stayed in small hotels, lodges, or with family, avoiding resorts. On the roads or when visiting small towns for the first time, we were always looking for traditional food restaurants or stopping to eat at family-owned dining places that are called “Fonditas” or “Merenderos”.

Most of these places offered a variety of seafood dishes, and in some cases, the fathers or men of the families were fishers. Very early in the morning, they go fishing, and part of the catch was for fresh produce sales and the rest for the family restaurant. As my parents have always enjoyed cooking, they often had conversations with the owners, sharing recipes, traditional cooking methods, and food conservation techniques (as seafood from the Northeastern part of Mexico is quite different from the South). In the meantime, my siblings and I played around with the family kids in the decks and the boats. The exposure to the type of places and families gave us a chance to experience local cultures and life that are largely shaped by fisheries. On some occasions, at the end of the day, the owners offered us boat tours through the lagoons or coastal areas where they were located. This was an activity that was sometimes offered to other visitors, as an alternative income option for them.

This is the case of many families in Mexico, they mainly depend on fishing, but they have been diving into other different options over the last decades, such as tourism-related

activities. The ultimate motivation of them is to thrive; providing the best for their families, by doing what they know and what is feasible for their livelihoods. This often means just empirically taking actions on entrepreneurship. There are some types of support and incentives provided by the government to help them that will be described in the next chapter.

Better strategies are necessary to help this sector, because some inequalities are created by a lack of organization and community-based management (Fraga, 2006). In regards to sustainable outcomes and conservation, sometimes people may be aware of the importance of conservation, either for previous education or for personal values (Stronza, 2009), but not everyone has the same commitment or knowledge of responsible environmental practices. Thus, ecosystem damage has been caused to different coastal and lagoon areas, as it has happened in Ría's communities.

With the curiosity to analyze these situations and taking into consideration the pressures that have emerged in San Felipe, Río Lagartos, Las Coloradas, and El Cuyo, I aim to provide integrative and context-based answers to the following questions:

1. What are the main characteristics of tourism in Ría Lagartos Biosphere Reserve and its relationship with the fisheries communities?
2. What are the impacts and effects of tourism in the fishing communities in Ría Lagartos?
3. What needs to be done in Ría Lagartos to make a transition from vulnerability to the viability of SSF with tourism as the main driver?

Based on my three questions, I decided to mainly explore and understand the following points as a guide to define my literature overview scope, particularly in the Mexican context:

- Fisheries and tourism and its links
- The nature of small-scale fisheries and existing pressures
- Promising trends in fisheries management
- Common pool resources in marine areas and tourism (beaches, coral reefs, lagoons, cenotes, among others)
- Community planning theory
- Where is tourism going? (The Future of Travel, Dr. Megan Epler Wood)
- New paradigms in tourism (sustainable and responsible tourism)

- Tourism frameworks and sustainable development approaches integrated in the government strategies of Yucatan (Programa Especial de Turismo Yucatan 2018-2024)
- Tourism and niche markets
- New roles of fishers

The table below describes the primary sources of data collection, its type, materials, key information, and relevance for this research.

Table 3.1 Sources and Themes of Primary Data Collection

Source	Type	Material	Key Information	Relevance
Research papers	Science-based on mixed methods	Published papers on different keywords and case studies	Fisheries, fisheries management, sustainable development, tourism, ecotourism, Mexico and Yucatan's Peninsula, planning, governance, stakeholders' partnerships, vulnerability, resilience, socio-ecological systems, conservation, coastal resilient communities	Science-based material regarding fisheries and different the areas of study relevant to the literature areas chosen for this research
Tourism, Planning and Sustainable Development Books	Paperback	Manuals, frameworks, theory	Tourism policy and planning, a compilation of good practices, tourism methodologies, tourism research methods, tourism branding	Tourism planning frameworks applicable in coastal and marine environments
Ministry of Tourism	Government	Plans	Past strategies, current plans, approaches, priority areas, existing partnerships-, medium- and long-term visions	To understand and assess the past, current and future policies and plans in the region
Government of Yucatan	Government	Plans	Sustainable development visions, priority areas, key institutions, SDG's agenda 2030, action lines	To overview the sustainable strategies that have been integrated in the policies and plans and how they have been put in practice in the tourism and fishing sectors and the community

				development aspects
News, social media, Websites	Media	Newsletters, tourism pages, business websites, marketing, culture promotion	Cultural festivals and events (regarding tourism and fishing), local businesses, tourism reviews, community-based groups	To collect data and key information about the local tourism practice and events, overview of the fishing practice and its conditions, local related businesses, and related events
National Commission of Fisheries and Aquaculture (CONAPESCA)	Government	Plans, regulations, sites information	Management levels, strategies, Yucatan's fisheries profiles	To overview the key regulations and management plans in the Mexican fishing sector
RAMSAR	Institutions	Designated sites information	Ría Lagartos Biosphere Reserve profile, communities, reports	To build up a profile of the reserve and its surrounding communities, consult past reports and identify key recommendations and areas opportunities issued by this institution
National Commission of Natural Protected Areas Mexico (CONANP)	Government	Plans, regulations, sites information	Ría Lagartos Biosphere Reserve profile, communities, biodiversity data, regulations	
FARNET Fisheries Areas Network guide	Plans	Frameworks, case studies	Fisheries and tourism linkages, assessment, planning guidelines	As a framework and reference to identify key opportunities of fisheries and tourism context-based projects

Note. The methods to find and select these materials were searching for key journals, official government publications, consult relevant media sites, and review reports issued by institutions.

Based on a pragmatic paradigm, these materials helped me understand the context of the area and analyze key data of the tourism and fishing sector. This allowed me to direct ideas and elaborate them based on frameworks and combine methods and approaches to explain possible solutions for the tourism-marine environment of Ría. This paradigm also allowed me to focus on what can be achieved in the communities with flexible options and propose viable solutions for the existing opportunities and challenges that exists in the area. Furthermore, within the context

of social science, the goal is to make this research transferable to other similar coastal and marine case studies, particularly small-scale fishing communities to help them thrive, enhance livelihoods, and follow sustainable goals.

3.3 Case Study

The Ría Lagartos Biosphere Reserve is in the southeast of Mexico, in the Eastern-Northern shoreline of the Yucatan Peninsula that limits to the Gulf of Mexico. This area protects 150, 000 acres of different ecosystems including mangroves, small estuaries, coastal lagoons, marshes, and savannah encompassing the largest estuary in the Yucatan peninsula, with an extension of 70 km (UNESCO). It is highly recognized for its biodiversity value. Research has registered more than 450 vertebrates and near 100 plant species, including those under official protection. RLBR ecosystems are the home and place of reproduction of 280 bird species (CONANP).

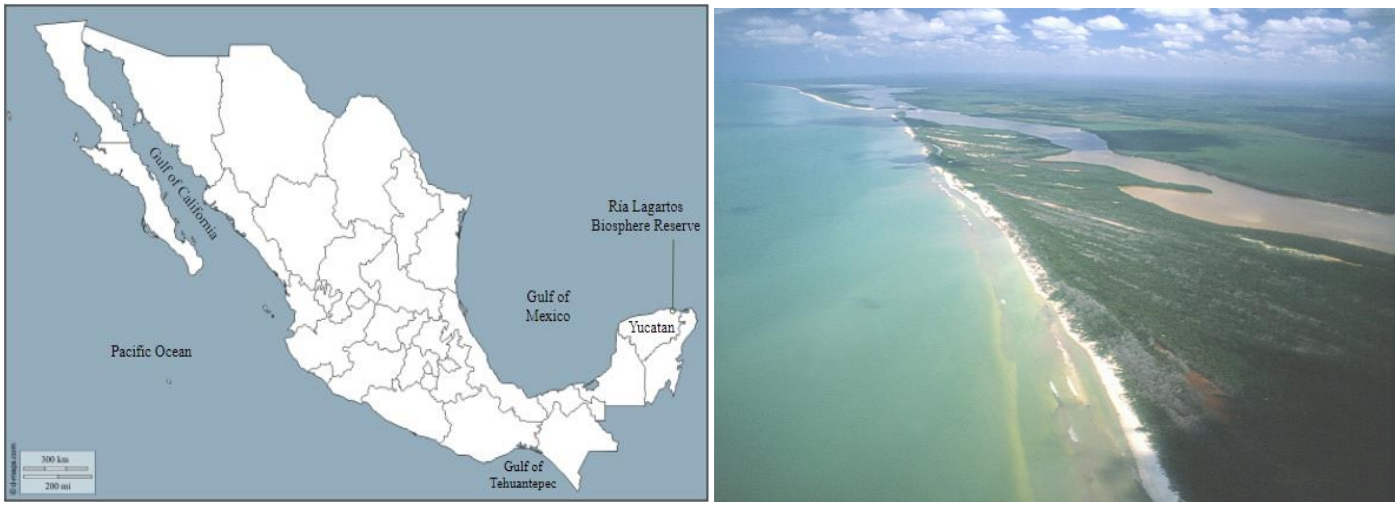

Figure 3.1: Case Study Map Location and Aerial View of The Ría Lagartos Biosphere Reserve Note. Map elaborated by author. Aerial view from CONANP (2020)

Four fishing communities are part the reserve: San Felipe, Río Lagartos, Las Coloradas, and El Cuyo. The four towns have less than 10,000 inhabitants. The towns of Las Coloradas and Río Lagartos are only within 20 minutes' driving distance and are part of the Río Lagartos Municipality. El Cuyo belongs to Tizimin. The salt production pink lagoons are located in Las Coloradas and are a private area that belongs to Industria Salinera de Yucatan SA de CV. However, visitors go to observe and take pictures from the side (CONANP). The Ría Lagartos estuary has three connections with the sea, one natural through the mouth of San Felipe, the other two are artificial canals, San Felipe and Río Lagartos (CONANP).

Figure 3.2: Location of San Felipe, Rio Lagartos, Las Coloradas, and El Cuyo. Note. Adapted from INECC (2020)

The table below resumes a demographic overview of the towns.

Table 3.2 Demographics Information of San Felipe, Río Lagartos, Las Coloradas, and El Cuyo

Town	Municipality	Population (habitants)	Extension (km2)	Main activities
El Cuyo	Tizimin	1,750	1.06	Fishing
Las Coloradas	Río Lagartos	1,151	.477	Salt industry
Río Lagartos	Río Lagartos	3,974	249.09	Fishing and bird watching
San Felipe	San Felipe	2118	680.85	Fishing

Note: Adapted from Instituto para el Federalismo y el Desarrollo Municipal (INAFED) and Secretaría de Gobernación SEGOB (2010) and Data Mexico (2010).

Apart from fishing, Ría's ecosystems provide a variety of resources viable for other different activities, such as salt extraction, agriculture, livestock, and tourism. Artisanal fishing is the most important activity in the region (INE 1999; INE 1993; Government of Yucatan, 1988) . Among

other activities are bakery, sewing, manufacturing, and construction services (CONANP). With Cancun being a popular tourist destination, the practice of ecotourism in Ría has positioned itself as one of the main economic income alternatives for local families (Daltabuit Godás et al., 2007). The flamingo nesting season in the salt pink lakes of Las Coloradas attracts tourist's attention every year. Visitors can also choose from a variety of activities including fishing, visiting crocodile farms, water sports, hiking, among others. Nowadays, the area receives approximately 30,000 visitors and bird watchers per year, from local, national, and international origins (RAMSAR; Yucatan Ministry of Tourism).

3.4 Methods

I followed a mixed-methods approach based on a secondary literature review. I particularly chose to look at planning theory. Qualitative methods through the lens of planning are key tools that help understand the underlying causes and motives of particular circumstances and helps to revels different perceptions and values. It breaks down the elements of unique circumstances and it helps describe a profile of complex contexts. It also allows to organize different types of data to assess existing conditions, evaluate interventions, prepare case studies, and present future scenarios. As a result, researchers, planners, and decision-makers can immerse themselves in study areas with a rich place-based understanding in a relevant and yet structured way (Analytic Methods of Urban Planning: Qualitative, 2021).

To build-up this research, on summer 2020 some V2V classmates, colleagues, and supervisors worked together virtually on a weekly basis. We worked simultaneously while focusing on our own research topics and objectives, finding the best concise and up-to date data. We all attended a Zotero workshop to learn effective management of references, also to create a common database for the V2V Global Partnership. We have classified all our materials according to our topic for our own consultation and references management but also for the access of other researchers and professors from the partnership.

The keywords to scope key research papers included different words related to small-scale fisheries: vulnerability and viability, tourism, fishing, and governance in the global and Mexican contexts. Extensive research has been done in the different topics as well as in the case study area. I first tried to look at papers who could give me an overall understanding of global contexts in each tag and then chose the main ones with more relevant information and with

similar characteristics or connections with my study area. Then, I tried to complement this first filter with key materials in the national context that were also linked or shared similar case study conditions to Ría. In the same way, with key similarities or applicable. The following table describes the key steps for the analysis of literature in this thesis.

Table 3.3 Steps for Literature Analysis

1. General search:
Brainstorming relevant keywords (see bullet points below). Mainly to have a first glimpse of how much material is available, and to comprehend key concepts and global contexts. About 800 documents were filtered based on the title and journal.
The main journals included are: Ocean and Coastal Management, Marine Policy, Journal of Sustainable Tourism, Fisheries Research, Human Ecology, International Journal of the Commons, Tourism Management, Ocean & Coastal Management, Ecosystem Services, Land, Sustainability of Integrated Coastal Management, Journal of Business Management and Economic Research, International Journal of Sustainable Development and Planning, Journal of Outdoor Recreation and Tourism, Water Resources and Rural Development, Tourism Management Perspectives, Conservation and Society, Tourist Studies, Regional Studies in Marine Science, Estuarine, Coastal and Shelf Science, Maritime Studies, Landscape and Urban Planning, Current Issues in Tourism, Journal of Contemporary Food and Regional Development, Land Use Policy, Global Environmental Change, Journal of Business Ethics, Journal of Planning Education and Research, Business Strategy and the Environment, Ecology and Society, Social and Natural Resources, Regional Environmental Change
2. Screening and inclusion:
Kept key materials from the previous step and included those focusing on a national and regional levels, and context similarities with my study area. In this step, about 400 papers were stored.
3. Assessing content and applicability:
For this step, I Identified the papers which were mainly connected and suitable to the main folders as per shown in Figure 3.3 (Fisheries and tourism, Fisheries Management and Sustainable Development, Mexico and Yucatan's Peninsula, Planning, and Vulnerability and Viability). To extract these materials, I focused on their applicability to build a chronological explanation, create an evidence-based structure, and link suitable frameworks as explained in Figure 2.12.
4. Analysis:
After reading and analyzing the full content of papers and specific sections of additional materials, key data was identified to support and build up this thesis. As per shown in Table 3.3, 101 papers, 14 books, 1 thesis, 2 government documents, 9 media publications, 2 institution reports, and 2 guides were consulted and stored.

Note. Adapted from Huynh et al., (2019)

Below, I list the main words considered for these search combinations:

- Small-scale fisheries:

fish consumption, market, overfishing, seafood market, global demand, marine conservation, emerging strategies, small-scale fisheries, eco-certification, capital-intensive industrialized fisheries, cross-sectoral collaboration, new methods, path to sustainability, fishery co-management, sustainable fisheries, sustainable global fisheries, coastal-ecosystem based management, blue economy, marine sustainability, fishery improvement projects, fishery harvest strategies, FLAG strategy, tourism in fisheries areas, linkages tourism-fisheries, fishing heritage, experience economy, fishing ports, tourism coastal areas, local development strategies, local fisheries, recognition, identity, appropriate conditions, small-scale.

- Vulnerability and viability related concepts:

Well-being, vulnerability, drivers, resilience, dynamics, adaptation, community based, socio-ecological systems, cope, shocks, leadership, collective actions, support, build, change, local, global, pathways, development, environment, challenges, capacity, community perception.

- Tourism and fishing:

Fisheries management, tourism, fisheries-related tourism, tourism development, ecotourism, responsible, sustainable tourism, stakeholders, partnerships, linkages, tourism offer, community, small-scale fisheries, coastal and maritime tourism, fishers.

- I-ADApT:

Coastal areas, impacts, stressors, vulnerability, governance, natural system, social system, governing system, ecological status, livelihood, opportunities, aquaculture, household, income, governance, governability, management, regulations, instruments, cooperation, circumstances, fishers' associations, fisher's unions, business owners.

- Global context:

Global fishing, global tourism, fishing fleet, recreational fishing, leisure fishing, fish markets, target audience, pesca-tourism activities, aquaculture, primary sector, structure, species, catches, artisanal fisheries, overall fisheries sector, small vessels, semi-industrialized fisheries, Mexican coasts, inland fisheries, marine fisheries marine spatial planning, integrated coastal management, national legislative framework, regional development, fisheries fund, newer economic activities, tourist sites, right technologies, world's fisheries, sustainable development goals, conservation

work, stakeholders, partnerships, strategies, goals, harvest, enforcement and compliance systems, market incentives, co-management, right-based management systems, multiple sector, ecosystem level.

- Mexican context:

Yucatan peninsula, tourism, historic context, tourism sector, ecotourism, fishing sector, development, natural reserves, government plans, investment, ministry of tourism, employment, hospitality, Mexico, Mayan, rural, local, regional, national, global, international, tourism development, progress, Caribbean, Mexican government, Caribbean sea, tourist destination, cultural influence, tropical nature, tropical rainforests, cenotes, underground cave systems, white sand beaches, archaeological sites, Mayan ruins, restaurants, hotel zones, attractions, Spanish conquest, indigenous, Merida, Pueblos Mágicos, towns, municipalities, biosphere reserve, Ría Lagartos, Celestun, Las Coloradas, Uxmal, Chichen Itza, San Felipe, El Cuyo, Mexico hyper cultural, biodiversity, UNESCO, flamingos, Latin America, pre-Hispanic ruins, fisheries sector, Mexico's fisheries, Gulf of Mexico, industrial vessels, native species, hatcheries, Conapesca, endemic species, sustainable fisheries, stock, seafood supply chain.

The final main combinations were as follows:

- Resilience, coping, strategies, small-scale fisheries, threats
- Tourism, ecotourism, fishing, management, community, sustainable development, resources, local, policies
- Fisheries-related tourism, pesca-tourism, blue economy, community, strategies
- Mexico, Latin America, fisheries, tourism sector, government plan, sustainable development, community-based management.
- Local development planning, strategic planning, tourism, coastal, innovation, management

I categorized the papers and books in five different folders: 1) Fisheries and tourism, 2) Fisheries management and sustainable development, 3) Mexico and Yucatan's peninsula, 4) Planning, and 5) Vulnerability to viability concepts, as per showed in the printed screen below.

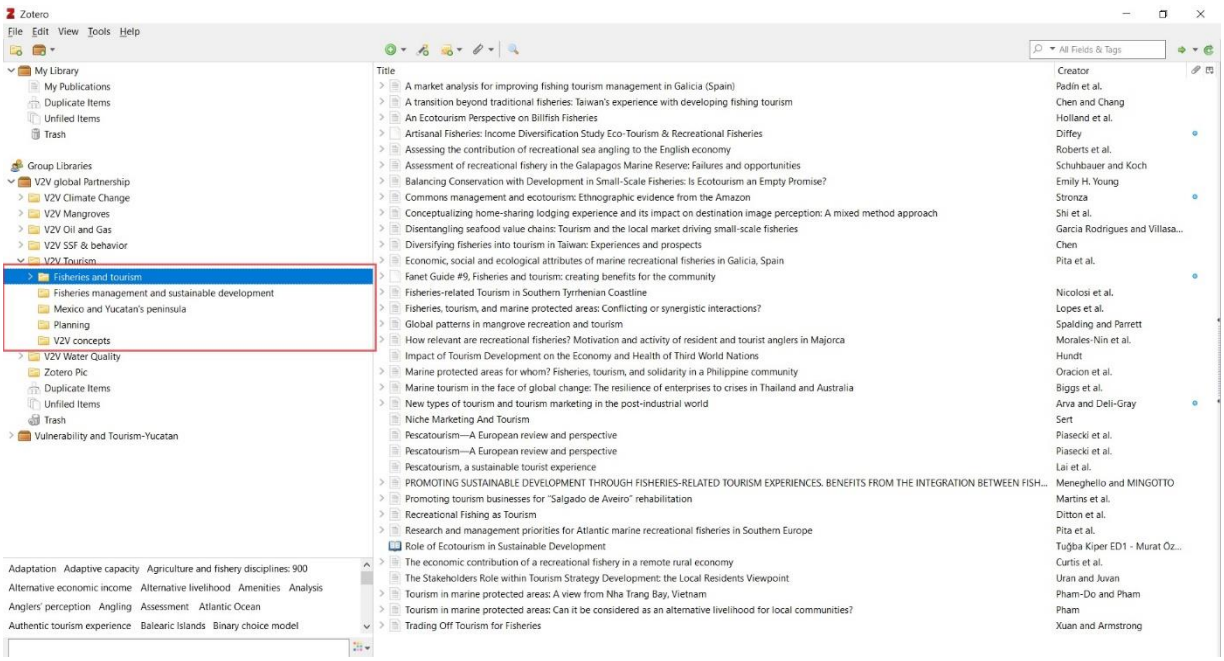

Figure 3.4: Zotero Folders Classification

The table below provided a count of the literature and material reviewed, also classified in the categories as in Zotero.

Table 3.4 Count of Literature and Materials Reviewed

Folder	Papers	Books	Thesis	Government Documents	Media	Institutions Reports	Guides
Fisheries and tourism	33	1			5	2	1
Fisheries management and sustainable development	13	2					
Mexico and Yucatan's peninsula	21	1		2	4	3	
Planning	24	6					
Vulnerability to viability concepts	10	4	1				1

I made an additional search regarding Yucatan's biodiversity and Natural Protected Areas to find Biosphere Reserve's profiles and fisheries' official reports. These documents were mainly issued by RAMSAR, CONANP, and CONAPESCA. Similarly, key planning, tourism, and sustainable development books were consulted.

In addition to the Secondary Literature Review, the following methods were used:

- Community-embedded application of IMBER I-ADApT (V2V)
- The FARNET Guide Framework for Fisheries Local Action Groups (FLAGs)

I used the community-embedded application of I-ADApT (V2V), as a part of the project "Vulnerability to Viability (V2V): Global Partnership for building strong Small-Scale Fisheries Communities", in which the main goal is to critically examine factors and conditions contributing to the vulnerability of SSF and enhance viability. V2V is supported by the Social Sciences and Humanities Research Council of Canada under its Partnership Grant Program. I-ADApT is a tool that helps to analyze the natural, social, and governing systems associated with small-scale fisheries, the stressors affecting them, and their responses. It aims to reveal an analysis of communities' awareness of their strengths and vulnerabilities, how they perceive viability. As well, it looks at the relationship between the scale of the community and the scale of the stressor.

The sections of the I-ADApT framework guided me to build a complete profile of the study area. This was applied to both the fishing and tourism sectors, as well as situations about vulnerability and governance issues. In the same way, it helped me compile necessary data for the FARNET guide, to then analyze opportunities for pesca-tourism activities under a Strategic Planning theory. The FARNET guide helps finding potential links between fisheries and tourism; identifying assets for fisheries-related tourism activities potential positive and negative impacts of tourism development; preparing project ideas; involving stakeholders; and ensuring linkages.

3.5 Research Reflections Throughout the Process and Limitations

Visiting a study area and conducting research while interacting with emerging and key researchers and residents in the community is a fantastic personal and academic opportunity. The backbone step of this dissertation was to be on the field for twelve weeks, visiting the communities with the support of The Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional (CINVESTAV), which is located 215 km away of the town of Río Lagartos. Due to the global circumstances of COVID-19 and travel limitations, this was not possible.

After switching from a primary data-oriented research thesis to a secondary data and literature-based thesis, I was unable to conduct some in-person qualitative research methods that

I had planned, such as interviews and focus groups with residents and key stakeholders. Nonetheless, one notable advantage was the low cost of this research (Cheng & Phillips, 2014).

However, this did not discourage me. This situation inspired me to push further to better understand the context and the needs and opportunities in Ría. I began reading previous research, looking at government plans and regulations of key institutions, and informed myself through press conferences from the tourism minister. Similarly, I kept myself up-to-date with diversification plans in times of fishing bans, as well as with the people's opinions on them. I read traveler blogs, particularly those focusing on local seafood dishes and learned about new community initiatives of sustainable tourism. All this to gain a comprehensive scenario of the situation of the residents, the visitors, the fishers during the pandemic.

Wide-ranging research has been done in the area and I had access to major research papers and policy documents which greatly helped for my data collection. I also had the opportunity to consult key researchers of CINVESTAV and collaborating with their research group. Although I would have loved to be able to meet and collaborate in person, I highly valued this networking opportunity.

CHAPTER 4

The Nature of Small-Scale Fisheries and The Extent of Tourism in Ría Lagartos

4.1 Introduction

For a better understanding of different urban and rural contexts, one must look at recent economic trends as well as at key players and socio-cultural elements. Understanding the complexity of these factors will be of great help to identify current community needs, which will allow for more efficient solutions to viability (*Ecotourism Policy and Planning*, 2003; Daltabuit Godás et al., 2007).The content presented in this chapter is based on the first two objectives of this research that aim to build a profile of Ría and its main socio-economic characteristics.

Objective 1 is to examine the extent of tourism and the nature of the small-scale fisheries of the four towns that are part of the study (San Felipe, Río Lagartos, Las Coloradas, and El Cuyo). In this section, I provide an overview of the economic development and tourism at a regional level in the Yucatan Peninsula, and its connections to the communities in Ría. Second, I provide a timeline of key developments such as how the first artisanal fishing practices emerged. In the same way, the main characteristics of these sectors will be presented.

Objective 2 is to analyze the key contributions and adverse impacts resulting from tourism practices on Ría's communities. I identified the positive contributions and negative impacts from tourism in the communities and the fishing sector. Furthermore, an analysis of the interrelation of tourism with other activities (e.g., salt industry, agriculture, livestock) of the region is drawn, focusing on how they can act together as drivers for positive and additional pressures.

Overall, this chapter shares a profile of Ría's socio-ecological system by understanding its historical background and by analyzing the different elements that interact in the region. Additionally, I will describe the region's tourism practice, with particular attention to its interaction with fisheries, and the effects of unsustainable practices. The concluding remarks share a glimpse of the need for more sustainable and community-based planning and the

opportunities to build resilience based on Ría's assets and strengths, particularly fishing and tourism. This will be presented in chapter number 5.

4.2 Overview of Tourism in the Yucatan Peninsula

Tourism is one of the key sectors in Mexico and in the southeast, Yucatan is one of the leaders in the one of the most dynamic business. In recent years, The Yucatan Tourism Development Secretariat (SEFOTUR) has been investing to improve the main cruise ports of the state, including infrastructure projects, tourism activities, services, and training and professional development. In 2019, the state had 3.2 million visitors, setting a new tourism record in the region. 470,418 visitors were cruise passengers that arrived at the Port of Progreso, which is located 150 miles from Ría. These visits generated a revenue of $998,693 USD (Yucatan Magazine). The proximity with the neighboring state of Quintana Roo, where Cancun, Playa del Carmen and Tulum are located, had also made it easier for local and regional agencies to arrange visits in the neighboring towns of Ría (Daltabuit et. al., 2007).

The geographical location and cultural context have provided an interesting but complex tourist dynamic in the region, with positive and negative effects in the different states and municipalities of the peninsula. Beyond the rich biodiversity and landscapes, tourism is also linked to the cultural and historical context of the Yucatan Peninsula. Yucatan is well known for its numerous Mayan sites and beautiful colonial architecture (e.g., Chichén Itzá, Uxmal, Kabah, haciendas, among others) (MexConnect, 2009). Moreover, with over 60 new tourism products introduced across the region have significantly increased the visits from international tourists. The sustainable tourism niche is also playing an important role in the Yucatan's growth, providing benefits even in the small communities (Travel Pulse, 2020).

Figure 4.1: Location of the Ría Lagartos Biosphere Reserve and its Proximity to the City of Cancun (Yucatan Today)

4.3 The Historical Context of RLBR

The Ría Lagartos Biosphere Reserve protects nearly 60,000 hectares of different ecosystems including mangroves, small estuaries, coastal lagoons, marshes, and savannah, and it's the largest estuary in the peninsula with an extension of 70 km. The natural mouth of San Felipe and two artificial canals called San Felipe and Río Lagartos connect the estuary to the Gulf of Mexico (UNESCO). The Reserve is in the southeast of Mexico, in the Eastern-Northern shoreline of the Yucatan Peninsula. The area is registered as the largest nesting site for flamingo breeding colony and feeding habitat, but also for being a site for shorebirds during the winter season.

In 1979, Ría was declared a wildlife refuge area by the president of Mexico and a designated Ramsar Site in 1986, being the first Mexican reserve to obtain this category. In 2004, it was established as a UNESCO Biosphere Reserve. Some special research programs and education initiatives are dedicated to marine turtle and flamingo conservation (RAMSAR).

In terms of weather conditions, there are some threats in the region. In 1988 hurricane Gilbert passed directly over the Ría Lagartos and broke through the dune cordon in several places, but the breaks are considered a natural phenomenon and the local fauna can find a way to cope naturally (RAMSAR). In the same way, strong winds from the northeast, locally called *"*nortes*"* can cause natural coastal erosion and heavy rains with flooding effects affecting families and businesses (CONANP, INE). However, precipitation filters quickly through the limestone rock (INE).

Over the last five decades, economic opportunities have been blooming, and Ría's biodiversity has opened opportunities for different activities. Besides tourism, fishing has historically been a key sector due to its proximity to the coasts of the Gulf of Mexico and the semi-closed body of water that forms between the Ría's dunes. In fact, the fishing niche was the reason why the first inhabitants came to occupy the communities that today are part of Ría. In fact, the marine resources for fishing were a viable opportunity for families to settle. The practice has been mainly in an artisanal way (Daltabuit Godás et al., 2007) .

Through the years, migration movements have taken place in the coastal areas of Yucatan because marine resources represent an opportunity for jobs and enhance livelihoods (Pare Ouellet, 1994). In the 1980s, there was an important movement of people towards the coast because of the fall in the production and sale of henequen and tourism had a noticeable boost in the late 1990s. Livelihood's diversification than gradually became popular among fishers who started to dive into more activities, such as tourism and aquaculture. The environmental designations, the incorporation of Cancun into the international tourism market in the 1970s as well as the launch of the Federal Program of Tourism Development in 1967, caused the arrival of new tourist groups to the region. Nowadays, the tourism sector in the peninsula is one of the strongest in Mexico, and Yucatan.

In Ría's communities, in contrast with the Cancun area, ecotourism began to develop as a low-impact activity and as an alternative to mass tourism, gradually becoming a popular choice for tourism in Ría. Nowadays, tourism in Ría revolves around gastronomy, lodging, ecotourism, and fishing trips (SEFOTUR). These activities have been helping families in need of income

alternatives, and they promote development of the region. However, as discussed later in this chapter, both positive and negative aspects have emerged from its practice.

4.4 Main Economic Sectors in RLBR

Ría's labour force is mainly employed in the primary sector, including livestock, agriculture, forestry, fishing, and hunting. The towns are traditional fishing communities with direct access to the marine products provided by the Gulf of Mexico. In the industry sector, salt extraction has been an important activity since 1946. In general, the employed population in the state and Ría is distributed in the different activities depending on its location (Daltabuit Godás et al., 2007). The figure below shows an overview of the main economic activities in Ría's communities, the date when they started, and their main characteristics.

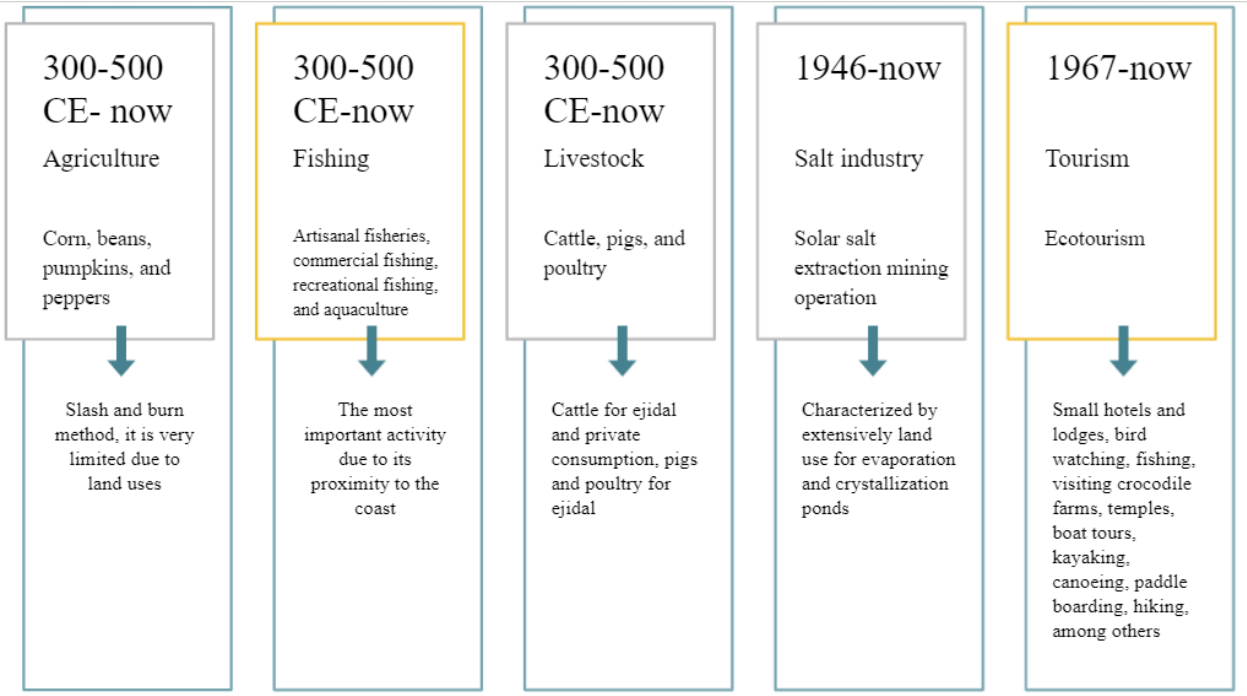

Figure 4.2: Timeline of the Different Economic Sectors of Ría and its Main Characteristics. Note. Adapted from (Vega-Moro et al., 2006) and Reservas De La Biosfera Y Otras Áreas Protegidas De México (1995).

**For the purposes of this research, a more complete profile of fishing and tourism will be provided in the next sections.*

4.4.1 Characterization and Structure of Fisheries in RLBR

Small-scale fisheries in the Yucatan Peninsula reported an average annual production of 60,000 tones between 2006 and 2014, with an economic contribution of $103 million USD. Only in 2014, 10,916 boats, 21,752 fishers, and 3,065 fishing licenses were registered (Coronado et al., 2020).

During the year, fishers capture different species alternating the use of fishing gear depending on the species and the current season. In terms of organization, both private and public sectors are involved in the fishing activity of Yucatan. As in the rest of Mexico, fisheries management plans are defined through a traditional top-down approach driven by the federal government. The private sector participates in the fishing activity through the extraction, processing, and commercialization of resources. The public sector participates mainly in getting resources (Coronado et al., 2020), by obtaining credits from intermediaries (private sector) to buy boats, boats, and fishing gear (Salas et al., 2006) .

In Ría, fishing has taken place since 300 CE when the first settlers arrived from rural areas. Artisanal fishery with low technology was one of the first practices among individual fishers. Nowadays, fishers have access to more gear and equipment and most of the boats are made of wood and fiberglass (CONAPESCA). The figure presents a profile of the fishing sector in Ría's communities.

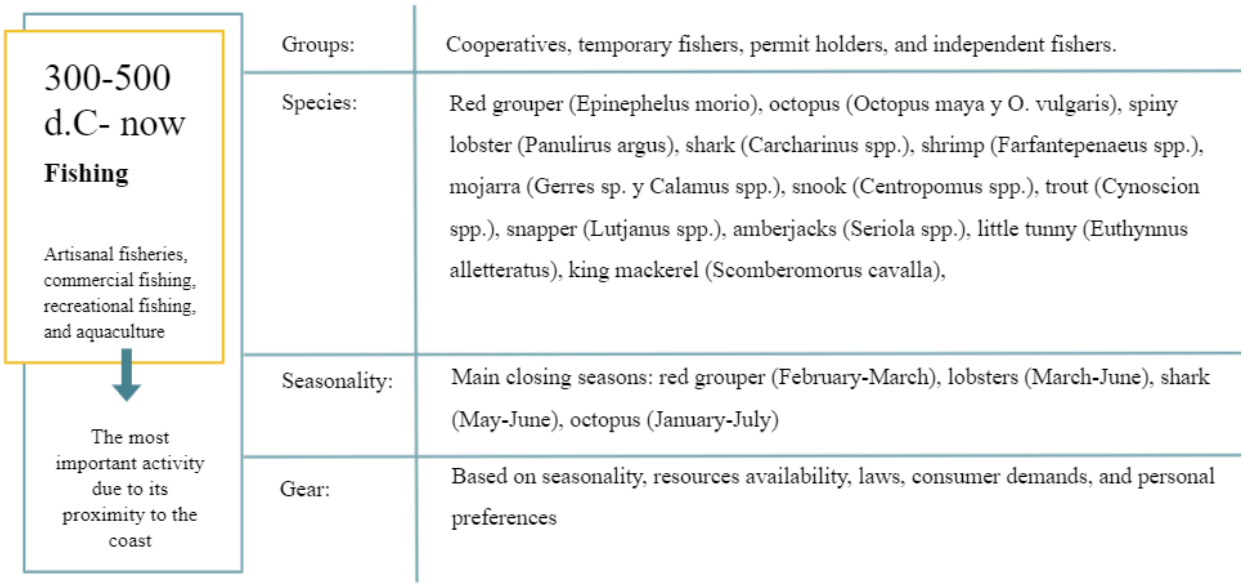

Figure 4.3: Main Characteristics of the Fishing Sector in Ría's Communities. Note. Adapted from Reservas De La Biosfera Y Otras Áreas Protegidas De México (1995), (Coronado et al., 2020)

The following table expands on the four different fishing groups established in Ría.

Table 4.1

Fishing Groups in Ría

Type	Description	Deficiencies
Cooperatives	Mostly integrated by different families or local participants willing to join. They have access to collect funds to invest, social insurance numbers, and year-end bonuses.	Lack of freezing equipment
Temporary fishers	Their contracts depend on larger fishing organizations.	They don't own equipment and don't have access to social insurance services. Their income is directly related to the volume of catch and the loans they get from the company.
Permit holders	They can own up to 10 fishing fleets and have their fishing equipment. They can also hire fishers.	Some of them don't have specific storage places, freezing

		equipment can sometimes be at their homes.
"Free" fishers	They directly sell to other fisher groups or third parties.	They don't have access to social insurance services, don't have licenses, some of them don't own their boats and gear. They often face issues with inspectors.

(Reservas De La Biosfera Y Otras Áreas Protegidas De México, 1995)

According to the Food and Agriculture Organization (Year?) and the latest Plan of Sustainable Development of Fisheries and Aquaculture of Yucatan published in 2012, the distribution of the fishing groups is presented below:

Table 4.2 Distribution of Fishing Groups in Ría

Town	Cooperatives	Companies	Free fishers	Total
El Cuyo	2	0	30	32
Las Coloradas	3	0	7	10
Río Lagartos	6	0	20	26
San Felipe	6	1	14	21

(Food and Agriculture Organization; Plan of Sustainable Development of Fisheries and Aquaculture of Yucatan, 2012)

In 2019, 1935 fishers of San Felipe, Río Lagartos, Las Coloradas, and El Cuyo were officially registered the Fisher's Census of 2019 done by the Government of Yucatan. This document lists all the fishers who certified that they fish as their main economic activity and that they meet the requested requirements (e.g., declaring the type of fishing, boat ownership, and if they have coworkers). This declaration is endorsed by their communities. However, according to some news reports, the accuracy of this list has been questioned because some fishers have claimed not being included due to age, experience and seniority, and activity definition (e.g., if

the person was really a fisher or just selling the product). Changes and updates to this list are planned to be done every year (Secretaría de Pesca y Acuacultura Sustentables de Yucatán SEPASY)

4.4.1.1 Past and Current Pressures in Ría's Fisheries

Different environmental, economic, and social factors have been affecting fisheries have in the Yucatan Peninsula, enlisted below, based on the Sustainable Development Plan of Fisheries and Aquaculture of Yucatan (2012) and a study developed by Salas (2019).

- Inefficient fishing planning, management, and monitoring programs and weak governance strategies
- Inaccurate inventory of fishing equipment, gear, and fleets
- Illegal practices
- Business closures and suspended permits due to non-compliance with regulations
- Competing for land scape (urban sprawl and infrastructure, tourism development, and energy parks)
- High vulnerability climate change effects (there are stronger and more frequent storms and hurricanes every year)
- Factors directly affecting ecosystems and fisheries, such as coastal erosion, urban and plastic pollution, and habitat degradation and changes in the ocean environment, such as variables in species distribution and sargassum
- Migration.

In Ría, two main conditions have been affecting the fishing sector over the last five decades:

- The product supply crisis caused by bad resource management, regulatory fishing agreements, and human activities
- The lack of a specific state plan for the more inclusive and sustainable development of the fishing industry, or a cross-sectoral plan that meets the needs of the fisheries

To expand on this, the table below lists the main problems, common causes, and possible areas of improvement in Ría's fisheries and other communities in Yucatan.

Table 4.3 Main Problems, Causes and Areas of Improvement in Yucatan and Ría's fisheries

Main Problems	Causes	Areas of improvement
Limited business growth	Lack of integrative support	Fisheries assistance, loan program, training
Changes in fishing supply (species)	Status and disturbance of the ecosystem	Respecting species recovery and natural cycle, science-based solutions
Lack of basic infrastructure and facilities (in rural areas)	Uncoordinated planning, poor public works services and projects, mismanagement	Integrative planning
Pollution, environmental deterioration, climate change→ habitat disturbance	Unsustainable practices, irresponsible activities, poor sanitary regulations, inefficient infrastructure, waste management	Environmental assessment, regulations
Habitat disturbance, invasive species, a marine bacterium	Development changes, unregulated activities in sensitive ecosystem areas, lack of science-based conservation practices	Respecting species recovery and natural cycle, science-based solutions
Unsustainable fishing practices→ habitat degradation and overfishing	Need to catch regardless of the fishing regulations, inefficient zoning and regulatory fishing and aquaculture plans, corruption problems, non-compliance practices, poor tourism demand regulations	Regulations
Unsustainable practices in different activities	Lack of specific training and environmental education	Training, regulations

Note. Adapted from (Daltabuit Godás et al., 2007; Fraga, 2006; Pedroza & Salas, 2011; Rubio-Cisneros et al., 2019; Salas, Bjørkan, et al., 2011; Sofía Arenas Castillo et al., 2016; Vega-Moro et al., 2006)

4.4.1.2 Possible Opportunities and Viable Panoramas for RLBR' SSF communities

Small-scale fisheries and aquaculture practices can improve food and nutrition security, increase income, improve livelihoods, promote economic growth, and serve as a tool for protecting the marine ecosystems (Berkes, 2001). Development options in Yucatan are complex, and their future is largely determined by government action, stakeholders' collaborations, and community participation. A scenario proposed by Dr. Silvia Salas and co-authors in 2003, also suggests the implementation of an integrative management of resources, in which fishing is not an isolated activity from the others that also take place in Ría and Yucatan. This to look for a balance between a wise use of resources and conservation goals and to promote more sustainable systems in the long term. The same paper states that it is necessary for the following: supporting conservation programs in vulnerable ecosystems; generating development plans according to the capacity of coastal systems; integrating biological, economic, and social information for more viable planning schemes.

The current situation of fisheries in Ría, as in other Mexican fisheries, shows an urgency for participatory fisheries management schemes (Pedroza & Salas, 2011). Contribution from fishers is key to provide significant information useful for defining management plans, such as knowledge about the fishing areas, species distribution, and seasonal variability (Hall & Close, 2007). This will allow to find better mechanisms that can help to reverse the impacts of actions that have contributed to unsustainable fishing practices (Berkes, 2001; Silver & Campbell, 2005). The fishers' participation approach has already been established in previous management plans, but it has not been effectively achieved. In terms of diversification, fishers are aware of the many benefits of practicing different economic activities, particularly tourism. Diversification can generate positive outcomes, not only in tourism: in fact, it can also help protect communities from disturbance and vulnerability situations when opportunities are scarce (Marschke & Berkes, 2006; Nayak, 2014). However, diversification needs supporting policies and programs by the government to generate economic benefits and guarantee the protection of fisher's access to resources (Nayak, 2017). Chapter 5 will further expand on the prospects for viability in Ría's SSF communities.

4.4.2 Characterization of Tourism in RLBR

This section presents an overview of the tourism sector in Ría's communities. I will describe antecedents, key characteristics, and emergent tourism niches.

In the 1980s, there was a significant migration of the population of rural communities towards the coast because of the fall in the production and sale of the tropical agave henequen (Pare Ouellet, 1994). In the search for income alternatives, fishers temporarily abandoned the practice to dive into other labour activities in their communities such as tourism and aquaculture (Fraga, 1999; Robles de Benito 2005; Daltabuit Godás et al., 2007).

The tourism boost in Ría dates to the early 1990s, where the community received visitors, friends, or relatives from other cities. Nowadays, the tourism activity in Ría revolves around gastronomy, lodging, ecotourism, and fishing trips; with national and international visitors that first arrive at the cities of Cancun and Merida (Daltabuit Godás et al., 2007). The figure below presents the key characteristics of tourism in Ría.

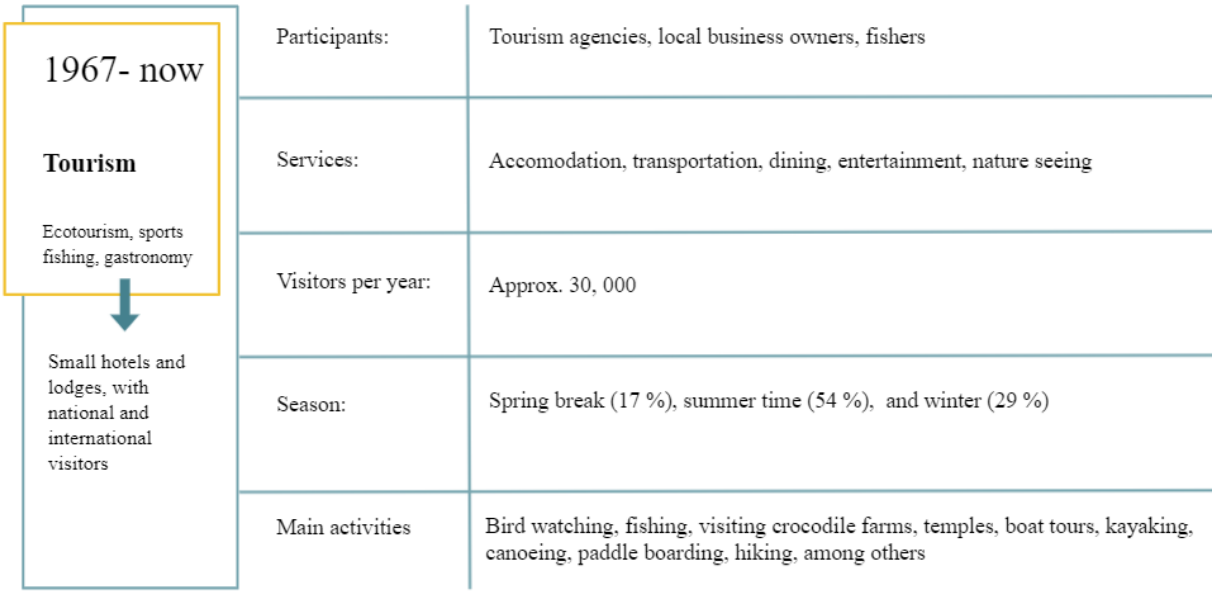

Figure 4.4: Main Characteristics of the Tourism Sector in Ría's Communities. Note. Adapted from Reservas De La Biosfera Y Otras Áreas Protegidas De México (1995) and the Yucatan Ministry of Tourism (2018)

Figure 4.5: A Flamingo Standing on Rocks in Ría (UNESCO)

Currently, the Yucatan coast is divided into seven tourist subregions: 1) Celestún, 2) Mérida-Progreso Corridor, 3) Progreso region, 4) Progreso-Telchac-Dzilam de Bravo Corridor, 5) San Felipe-Ría Lagartos Region, 6) Cuyo, and 7) Valladolid-Ría Lagartos-San Felipe Corridor (Government of Yucatan, 2003). Along with the cultural and archaeological attractions (e.g., Chichen Itzá and Uxmal), Ría is considered the second tourist route of the entity as well as Celestún. It has been an increasingly popular destination for ecotourism and adventure activities. The typical activities during a day include staying at lagoon-front hotels, sunrise boat tours across the wetland region, bicycle rides, visiting Las Coloradas and the virgin beaches, indoor and patio dining or meeting the local families and cooking the catch of the day.

During the high tourism season (Spring-Summer), a fisher with a boat offering boat tours in San Felipe to see the mangroves and species or other tourism-related activities can generate a daily revenue from 60 USD to 150 USD, when the average payday in Mexico usually ranges between 25 USD and 40 USD for professionals. Thus, many fishers have found this activity as a viable option and helps them value the importance of conservation (Gutierrez, 2014).

Figure 4.6: Views in Ría. Note. Information Sign (top left), aeRíal view of Las Coloradas (top right), tourism information centre (center right), and aeRíal view Río Lagartos (bottom) (Yucatan Travel, The Lama List)

With the diversification of activities, the inhabitants are required to make new agreements for the management of resources. Some of the agreements included the creation of cooperatives, in both tourism services providers and fishers. Ecotourism has helped to increase

local incomes and conservation awareness in Yucatan's reserves (Galicia & Baldassarre, 1997) , but communities have not been able to receive equal benefits from it (García-Frapolli et al., 2009). Stronger and formal policies need to be established.

4.4.2.1 Livelihoods and Ecological Impacts from Tourism in RLBR

Tourism always leads to development, and so does the ecotourism niche (UNWTO). Once destinations become popular, infrastructure changes begin to take place. They usually become the site of hotels and accommodation services, excavations, food and beverage, accompanying and communication facilities (Panasiuk, 2007). Positive outcomes of tourism include the creation of a special sense of place, promotion of conservation and resources enhancement, increasing urban development, and growth (Cox, 1985). Any type of tourism brings change to the area it takes place; environmental, economic, social, and cultural impacts are associated with it (*Ecotourism Policy and Planning*, 2003). Fishers in Yucatan have relied on tourism more than any other activity, either as an alternative activity to fishing or as an income supplement to it (Robles de Benito, 2005).

In Ría, and as in other ecotourism and tourism destinations in the world, tourism seasons have different effects in the area. When the tourism carrying capacity is exceeded, which occurs when the maximum number of people is present in one location at the same time, some effects of the high tourism seasons may arise (e.g., the daily number of boats for tours and changes in water quality due to the boats). Nowadays, tourism is negatively affecting fishing, with the increasing demand of marine species for hospitality services, which has led to overfishing and the decrease of some species. Furthermore, the high expectations on tourism combined with the lack of management and planning and the urgent need for diversification have led to the disintegration of the practice of traditional productive activities (Lagunas, 2007). For example, as many young people either migrate or decide to do other activities rather than fishing, fishing traditional knowledge is being lost.

The positive aspects of fishing are the marine biodiversity, the appreciation of these resources and its practice, and the different types of fishing that are allowed. The negative aspects and current issues include: the limited small-business growth for fishers and work

benefits, lack of training, unsustainable fishing practices, habitat disturbance, environmental degradation, and conflicts among fishing groups about the use of resources and payment.

The positive aspects of tourism in the area are that it is a good option for diversification, it is an all-year activity, different activities are possible, and that local people are friendly and open to visitors. The negative aspects pollution, habitat disturbance, poor integrative planning, lack of training and failure on following eco-standards, lack of vision for partnerships, and conflicts among the different participants offering tourism services. Furthermore, the lack of tourism monitoring and environmental assessment makes it difficult to create regulations according to the specific needs and challenges of the ecosystem.

The effects of tourism development in Ría and the lack of agreements between cross-sectoral development policies are limiting the contribution to environmental conservation and economic benefits for Ría's communities.

Table 4.4 summarizes the positive and negative effects in both sectors.

Table 4.4 Positive and Negative Aspects in Fishing and Tourism

	Fishing	Tourism
Positive aspects	• Variety of species • Different types of fishing allowed • Marine resources are valued locally • Traditional knowledge remains	• Good option for diversification • Almost all-season tourism • Variety of activities due to the biodiversity of the area • Local people are friendly and open to visitors
Negative aspects and challenges	• Limited small-business growth for fishers and work benefits • Lack of training • Unsustainable fishing practices • Habitat disturbance, pollutions, and environmental degradation • Conflicts among fishing groups about the use of resources and payment	• Organic and solid waste pollution • Lack of training and failure on following eco-standards • Lack of education and training for ecotourism services • Lack of vision for partnerships • Habitat disturbance (particularly the flamingos, and other fauna related issues such as turtle nest looting) • Lack of planning • Introduction of external fauna (for example, dogs) (Castillo et. al., 2015) • Conflicts regarding land ownership, management impositions, and power issues (López and Marín, 2010; Liscovsky, 2011) • Conflicts among fishers and boat operators about business operations (Diaz, 2010; Singh, 2019).

Note. (Pham, 2020; Pinkus Rendón & Pinkus Rendón, 2015; Daltabuit Godás et al., 2007; Sofía Arenas Castillo et al., 2016; Vega-Moro et al., 2006)

The monitoring and valuation of environmental impacts on tourism destinations are of high importance, regardless of the size, season, and markets. Regardless of how tourism development and ecotourism practices can cause threats and challenges in Ría's fishing communities, it will continue as an important element for conservation and livelihood outcomes (Sofía Arenas Castillo et al., 2016). Tourism represents a great opportunity to find mechanisms for resource management through collective action that promotes conservation and improves tourist activity (García-Frapolli et al., 2009).

4.5 The Pressures Caused by a Combination of Factors in RLBR' Socio-Ecological System

In general, the Yucatan peninsula has complex contexts due to its geographical locations and weather conditions, biodiversity, multiculturalism, and mass tourism in the coast of Quintana Roo. This section provides an analysis of how a combination of historic processes can act together as drivers and pressures, with both positive and negative outcomes. The four points below provide an analysis of interrelated circumstances that have gave place to the current context of RLBR.

1. The Decline of the Henequen Industry:

One of the first drivers of change in the peninsula was the decline of the henequen industry. This agave plant, used to create domestic, commercial, agricultural, and industrial products, was one of the main economic drivers in the peninsula during the Porfiriato years (1877-1880 and 1884- 1911). However, in the 1940's, the introduction of synthetic fibers led to its decline, leaving production haciendas abandoned and causing migration outcomes. Moreover, in 1984, The Henequen Reorganization and Integral Development Program of Yucatan also gave place to significant changes such as: diversification of agricultural activities; reorganization of agro-industrial activities; the promotion of industrial activities (clothing and textiles, food, beverages and tobacco); more promotion of tourism; and, more exploitation of fishing resources (Ayala Arcipreste, 2006). Nowadays, after being restored and renovated, many old henequen haciendas are used for tourism, residential and corporate purposes. Investors have turned them into hotels, restaurants, museums, or other profitable infrastructure (Government of Yucatan, 2021).

Figure 4.7: Henequen Harvesting in 1922

Figure 4.8: Former Hacienda "Sotuta de Peton"

Note. Nowadays, tours include visiting the main house, powerhouse, shredder machines, drying area, and learning about the finished products process (Henequen Tour, Zona Turistica)

2. The main sectors of the economy in RLBR, its interaction, and the multiple land uses of its coastal areas:

   Coastal communities operate in a complex and diverse environment in which they are linked, in varying extents, to multiple activities throughout history (Santana Talavera & Pascual-Fernandez, 2003). The resources in Ría provide opportunities for different economic activities, including fishing, salt production, tourism, agriculture, and livestock (Díaz Yarto, 2010). The area is shared by three main different components: The Ría Lagartos Biosphere Reserve, the "Industria Salinera de Yucatan, S.A.", and the waters of

the Gulf of Mexico and its marine resources. The combination of activities often represents potential conflicts over the use of land and resources if they are not carried out in a planned way (Robles de Benito, 2005). Its interaction brings up a complex interrelation that causes behaviors and trends in the rhythm of life in its inhabitants (e.g., decisions made by the communities, business approaches, migration, management preferences). Moreover, the actions taken by the communities are influenced by the way the government has made efforts to listen to their needs and tackle management solutions for the reserve. The complexity of Ría is outlined by 3 key historical processes that produced the confluence of one of the most important natural reserves in Mexico, the salt production market, and the livelihood diversification approach of the communities. In the figure below, these transitions are break down:

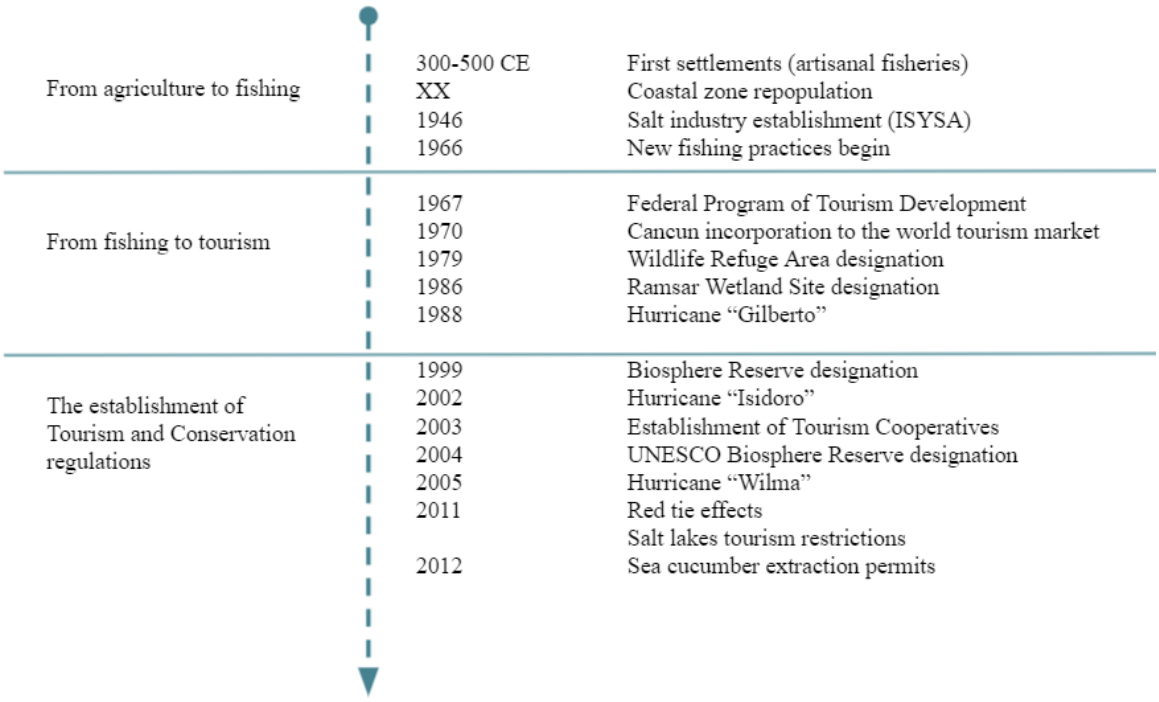

Figure 4.9: Economic Transitions in Ría. Note. Adapted from Diaz (2010)

3. The introduction of fishers to tourism practices:

The interest of fishers in the tourism sector arose fundamentally from two factors: the decline in fish stock and government attempts for conservation strategies, which put vulnerable communities in the position to work in sustainable tourism as an alternative. Fishers started to rely on and "*bet*" more on tourism than on other activities, either as an alternative activity

to fishing or as a complementary source of income (Robles de Benito, 2005). However, government initiatives gradually leaned more towards tourism investment and promotion, for example improving the urban image of the port, or to the maintenance of hiking trails, causing lack of attention to the fishing sector (Díaz Yarto, 2010) .

4. Poor regulation schemes and emerging group conflicts

The lack of official regulation and the transforming social conditions have generated conflicts over access and use of resources, causing division among the locals. The fishers point out the division of society as one of the main problems that the community is currently experiencing. One example is the division of fishing cooperatives into two groups in 2006: one made up mainly of the people we have called the "new fishermen", associated with the political party in power, and the other made up of fishermen from the port; the groups have different values (Díaz Yarto, 2010).

5. Unreached sustainability goals

The Mexican government strategies for Natural Protected Areas have often incurred contradictory actions and very few strategies have been implemented. Natural Protected Areas make significant contributions to local and regional economies through scientific research, education, and ecotourism, and supporting traditional activities. However, difficulty implementing policies has arisen due to the lack of coordination, disagreements between environmental authorities and the community, and the limited participation of local people's perspectives. Policies that are implemented without recognizing the internal social processes that govern communities can lead to uncoordinated planning and broken social structures, as each advocates for their personal interests alone (Doyon & Sabinot, 2014) .

4.6 Concluding Remarks

The small-scale fishing sector is facing challenging circumstances due to various drivers worldwide. One of them is tourism. Unplanned and unsustainable tourism practices add pressures on land uses, resources scarcity, increased pollution, and natural habitat disturbance. These effects can jeopardize the fishing sector and the families that depend on it. However, under the right conditions, both activities can complement each other and grow.

Similarly, other sectors in coastal communities can continue to operate if clear regulations and sustainable practices are introduced. This requires the evaluation of planning processes, the establishment of limits and rules concerning the uses of land and raw materials, and the implementation of interventions that enhance the advancement of the different group members involved. As stated at the beginning of this chapter, it is essential to comprehend the area's historical context, as well as market trends and cultural context. With a profile of the area, completed with identification of critical pressures and of past errors, it is possible to solve existing issues and propose effective opportunities for a more viable future. The following chapter will provide an overview of Ría's context-based panoramas and opportunities linked to pesca-tourism activities. To better identify possible paths of viability, I will pay particular attention to long-term feasibility of water resources management and fishing practice.

CHAPTER 5

The Prospects for Viability of Fisheries-Related Tourism in Ría's Communities

5.1 Introduction

The objective of this chapter is to explore strategies for successful community-based tourism planning to achieve viability in Ría's small-scale fishing communities. The following sections rely on the third research question of this thesis:

What needs to be done in the communities of Ría Lagartos to transition from vulnerability to the viability of small-scale fisheries with both tourism and fishing as the main drivers?

Three different frameworks were considered for this chapter, which are described below. Some of them had already been implemented in other regions of Mexico with similar contexts as in Ría's communities and other coastal and fisheries communities in the world. In Mexico, some of these frameworks have followed community-based approaches, that if well planned and implemented, they facilitate collaborations and improve organization (García-Frapolli et al., 2009). This will highly depend on readjusting government plans and fostering cross-sectoral partnerships. Overall, the strategies should be context-based, considering every environmental, social, and economic aspects than a socio-ecological system can encompass.

1) Community Economic Development and Strategic Planning

In Mexico, community economic development plans aim to improve the well-being and livelihood of people living in the most disadvantaged areas, as well as to expand the impact and social benefit of the population living in marginalized communities. Some previous year's national plans establish that development and growth apply to all actors, sectors, and citizens. According to these plans, development should not be centralized or dominated by a single actor. Growth and development emerge from the bottom up, when each individual party can make

significant contributions. In the tourism sector, there is some dissatisfaction from small communities, primarily due to unequal social and economic benefits for them and the failure to reduce negative environmental impacts (Herrera et al., 2018). The state of Yucatan has envisioned goals for 2024 within this motivation in his 2018-2014 State Development Plan. One of the axes of this plan is based on inclusive economy approaches, in which people can develop economically in any strategic activity of the state while also promoting Yucatan's economic development. This chapter will further review how this plan has established goals to address key situations in fishing context and existing tourism practices in Ría, identify existing gaps, and possible opportunities to develop between fishing and tourism.

2) The Fisheries Local Action Groups strategies (FLAG) from the European Commission (FARNET Guide #9: Fisheries and Tourism: Creating benefits for the community)

Fisheries-related tourism is a novel proposition for both coastal and inland destinations, where tourism growth focuses on local communities, events, and products as attractions, and where creativity and innovative strategies are needed to maintain integrated competitive advantages. Furthermore, fisheries-related tourism can be seamlessly combined with niche tourism "products" that define a variety of coastal and maritime destinations, including nature-based tourism and ecotourism, food tourism, and cultural landscape tourism. Fisheries-related tourism will enhance these experiences by encouraging local fisheries, communities, low impact movements and environmental awareness.

3) The latest Yucatan's state Tourism Plan "Programa Especial de Turismo 2018-2024"

This document was elaborated through collaborative participation to have a general panorama of tourism in the state of Yucatan and set effective actions. In the same way, a SWOT matrix was developed. All the information served as a basis to identify issues, define objectives, propose strategies, and state action lines in the context of tourism development at a regional level. Most importantly, is that this plan integrated the participation of different stakeholders. The methods and activities led by government representatives to create this plan included:

- A literature review of local, national, and international secondary sources, including a SEFOTUR (Tourism Promotion Ministry) assessment, and the definition of tourism planning priorities stated by the government.
- A Consultation Forum "Towards a Sustainable Tourism in Yucatan", with the participation of 11 speakers and 3 moderators and a total attendance of 614 people from different sectors. The core themes were: 1) Sustainable tourism development; 2) Product and tourist experience: The tourist of today; and 3) Tourist competitiveness.
- Specialized workshops on strategic vision, with the participation of key tourism stakeholders.
- 37 interviews with key tourism participants, at a local and regional level, including the business sector, representatives of various tourism industries and businesses, academic representatives, and the public sector.
- Site visits to analyze tourism products in specific destinations.

Sustainable planning of tourism has been integrated into planning procedures over the last decades since it involves considering different and complex economic, environmental, and social structures ((Mathieson & Wall, 1982; Dowling & Fennel, 2003). Good tourism planning requires recognizing the tourism nature of an area and the key players and stakeholders (Butler & Pearce, 1999). This analysis was done in conjunction with the identification of the first and main activity of the study area: fishing, as well as the sub-activities that interact with it in connection with tourism. I will present factors that may be favorable for the development of fishing tourism in fishing towns as a sustainable activity that benefits the economy, society, and the environment.

5.2 Prospects for Viability and Planning Aspects for Tourism in Small-Scale Fisheries

Fisheries-related tourism is a novel tourist proposition for both coastal and inland destinations, where tourism growth focuses on local communities, events, and production as attractions, and where differentiation strategies are needed to maintain integrated competitive advantages (Meneghello & MINGOTTO, 2016). Fisheries-related tourism can be seamlessly combined with niche tourism “products” that define a variety of coastal and maritime destinations, including nature-based tourism and ecotourism, food tourism, and cultural landscape tourism. Fisheries-

related tourism will enhance these experiences by encouraging local fisheries, communities, and low impact movements and environmental awareness.

The question is how to adapt to the unique characteristics of the region's small-scale fishing communities, while also considering what challenges they may be currently facing. Thus, different guidelines and frameworks in governance models should be investigated in order to provide the best solutions tailored to each zone. Moreover, when analyzing potential market niches and business opportunities in a location, it is critical to consider more equitable and fundamental market-based approaches. In the same way, once a community to viability, it is important to consider continuous improvement, monitoring and innovative adjustments to keep working towards the best outcomes. Furthermore, economic benefits should also be directed to strengthen the local fishing sector, such as the creation of advocacy groups and other non-profit marine conservation actions (Jacquet & Pauly, 2008) as well as schemes for better natural disasters action plans and infrastructure.

According to Ruhl & Craig (2010), given the variety of issues that arise in small-scale fishing communities, governance and management strategies should be site-specific and flexible. In the same way, these strategies should be based on the various benefits that ecosystems provide to people (e.g., natural aspects such as food, shore protection, climate balance, and human dimensions). Coastal managers and decision makers involved need to rely on public institutions that are open to new and flexible directions. The same authors emphasize the critical importance of putting in place market-based mechanisms for more sustainable urban governance. The following sections will present key prospects for viability and planning aspects for tourism in small-scale fisheries contexts and their particular applicability to Ría's communities.

5.2.1 Community Economic Development and Strategic Planning

According to Boothroyd and H. Craig (1993) communities are usually groups of people who have known each other and may share long-term goals. They can be defined by the area they are in or according to common interests. Development is a process that gives place to growth and advancement, positive transformation, or the addition of physical, economic, environmental, social, and demographic elements (Society for International Development, 2021). Development can apply to many things, but ultimately can be boiled down to progress and advancing towards

a higher level of operation or structure. Community Economic Development (CED) or local economic development (LED) "is a community-driven process where communities identify and initiate their solutions to economic, social and environmental issues to build healthy, economically viable communities" (*Community Economic Development for the Local Economic Development Officer Handbook*, Manitoba Agriculture, Food and Rural Development, 2018 p.1). Local stakeholders and other stakeholders set agreements and strategic steps to activate the local economy and improve livelihoods. The same document states the following examples as one of the main principles of this concept:

1. The mobilization of local resources (people, capital, institutions, organizations, etc.) to meet local needs
2. The reinvestment of profits inside the same community

Overall, the main goals are job creation, renewal and stabilization of local economy, establishment of local economic links, and improvement of the physical environment.

From the Canadian perspective, The Manitoba Agriculture, Food and Rural Development recommend involving as many people, groups, and organizations as possible in the community planning process. This is because when their opinions are heard, they are more likely to be involved in ongoing and future collaborations. The groups involved may be locals, business-owners, researchers, institutions, among others. Nevertheless, the support of the government is essential.

In the Mexican context, diverse realities and development processes coexist due to the great territorial extension of the country as well as to climate and population diversity. Thus, community or regional development are viable ways to deal with problems such as poverty, unemployment, and productivity in a more efficient way than if they were to be solved at the national level (Proyectos Mexico, 2019). In Yucatan, some good emerging initiatives aim to strengthen the collaboration among the government, planners, people, stakeholders, and the education sector.

One example is the approach followed by the government and the Ministry of Tourism of Yucatan when preparing the latest tourism program for the state. Another example more inclined

to community-based tourism is the Peninsular Partnership. This group is integrated by 24 local associations, with 661 participants in total. They aim to support ecotourism projects among 9 protected areas, including 4 biosphere reserves, 1 flora and fauna protection area and 4 state reserves. Participants have been discussing and analyzing strengths, needs, issues, and challenges that communities are facing concerning the tourism and ecotourism niches. Besides the interest of working towards supporting community organization, other areas to strengthen have been identified:

- Mayan cultural identity
- Local guides and most of the local people know the biodiversity features of the area and the history and importance of their culture
- The willingness to find common objectives and find ways for resources management

In general, CED is a process of socio-economic and environmental changes. By following a sustainability approach, another of its main goals is to guarantee the well-being of the population, by significatively reducing inequalities. The expansion of the productive, sociocultural, and political capacities and opportunities of society are part of the process (Olmos, 2013). With this frame of reference, tourism has become an important factor in the socio-economic development of countries. In fact, it is considered an effective strategy that allows progress in a region, where services cater to tourist needs while protecting the geographical space (Gambarota & Lorda, 2017)

In the context of tourism, strategic planning, and infrastructure in the small towns of Mexico, there are some key design aspects that can be considered in coastal regions to stimulate waterfront activities and economic development. These aspects can significantly help communities become more livable (e.g., creating a sense of belonging), promoting tourism (e.g., enhancing the waterfront image), and preserving key marine infrastructure and fishing facilities. The list below provides some examples that can be identified and analyzed in coastal towns.

1. Identifying and preserving key heritage buildings. In the same way, if restoration projects are executed, find the best options for adaptive reuse for the upcoming years, based on the different trends and market changes that the area could encounter (e.g., an old medium-sized

waterfront building that can be restored to be a hotel or seafood restaurant or a famous meeting point).

Figure 5.1: Touristic Information Centre, Río Lagartos Touristic Point, and Hotel Punta Lomo
Note. These giant letters have been installed in various towns and cities in Mexico as part of the tourist promotion. The Río Lagartos letters are in the West Pier. Source: The Lama List, The Yucatan Times, and The Haphazard Traveler

2. Respect and maintenance of traditional architecture and housing and establishing exteriors guidelines for a better image of the towns. Preferably, provide support to families for its maintenance.

Figure 5.2: Traditional Housing Typology Collage in San Felipe (ArchDaily, 2016)

3. Creation of passive activity and active sports areas in the waterfronts (e.g., bike and pedestrian paths in the piers and boardwalks, outdoor multi-sport game courts, playgrounds, parks, benches installation).

Figure 5.3: Bike and Pedestrian Path Projection in Río Lagartos. Note. Adapted from The Lama List and Hotel Río Lagartos

4. Maintaining access to the waterfronts respecting the natural shape of shorelines and banks with local landscape species and materials

Figure 5.4: El Cuyo Shoreline and Natural Landscape Design Intervention in a Hotel in El Cuyo. (El Cuyo.Net and Hotel Casa Cielo)

5. Preserve key views, for both in-town and waterfront or landscapes

Figure 5.5: El Cuyo Beach (TripAdvisor)

6. Establish local art performance spaces and promote summer activities for different age groups

Figure 5.6: Annual Festival in Río Lagartos and Kiteboarding lessons for kids in El Cuyo (Global FlyFishers and TripAdvisor)

7. Locate local dining places and seafood restaurants in the waterfront to attract costumers. Alternatively, identify key food clusters, and propose facade design regulations, patio guidelines, pedestRían streets, or complete street sections with urban vegetation elements

for higher and controlled flow of people.

Figure 5.7: Río Lagartos Waterfront and Restaurants in Río Lagartos and El Cuyo (The Lama List and TripAdvisor)

8. Prioritize establishing local and family-owned retail and businesses

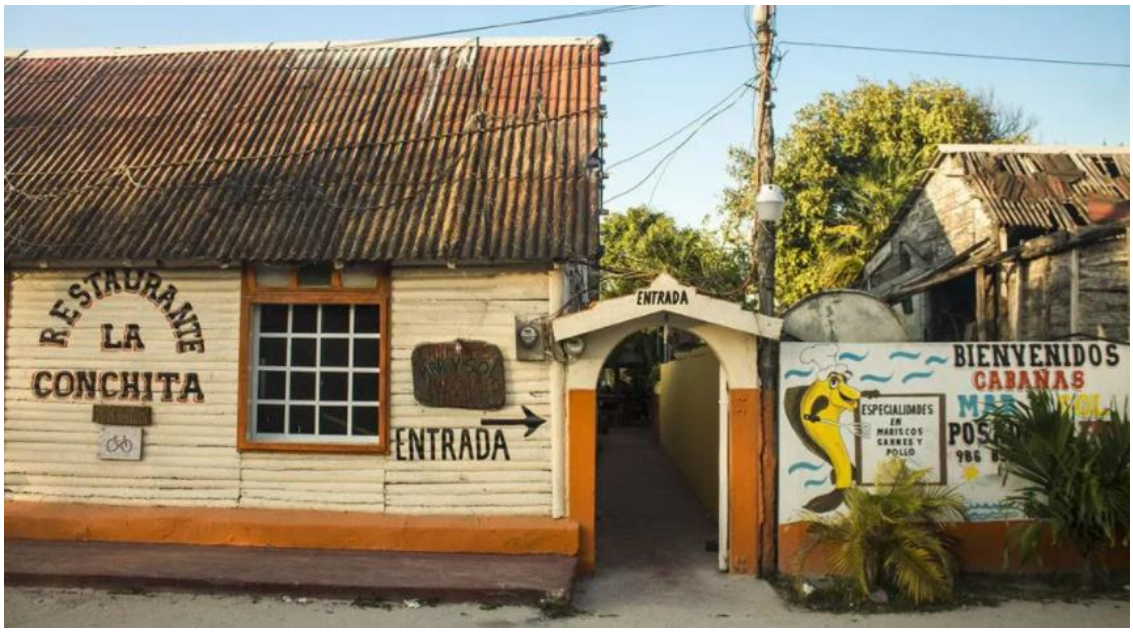

Figure 5.8: Local Restaurant "La Conchita" (Boundless Roads)

9. Establish official spots for farmers markets and local seafood vendors. Keeping access to grocery and food stores

Figure 5.9: Río Lagartos Market, and Fishers and Women Selling Their Products (Mexico en Fotos, FoodGloba, and El Cuyo.Net)

10. Create a sense of arrival and sense of place for both visitors and locals

Figure 5.10 : Visitor Information Centre and Road Sign (Yucatan Today and The Haphazard Traveler)

11. Signal main accesses to the towns, to the lakes and reserve, and indicate prohibited areas.

Figure 5.11: Ramsar Sign at Ría, Entrance to Las Coloradas, and Mangrove Walkway in Río Lagartos (Backyard Nature and Walking Mexico)

Other aspect to consider regarding urban aspects in coastal areas is the number of sectors (e.g., food, transportation, recreation, and energy) and its consumers, together with the land they require. Moreover, as the demand for these resources grows, so does the possibility of conflict between landowners and users. By establishing a clear land use planning for different purposes, this situation can change (Agardy, 1993). Zoning and land use planning should be analyzed by taking into consideration the existing infrastructure, buildings, protected areas, and water bodies in the location. Following a sustainability approach zoning and land use planning will allow to establish sustainable productive areas based on ecological, economic, and social factors, in accordance with the characteristics of each part of the peninsula. This mapping would allow state governments and private actors to establish where to develop economic activities and conservation efforts. Also, it would allow the establishment of regulations on each subregion. The map below shows seven different areas established in Yucatan in 2016.

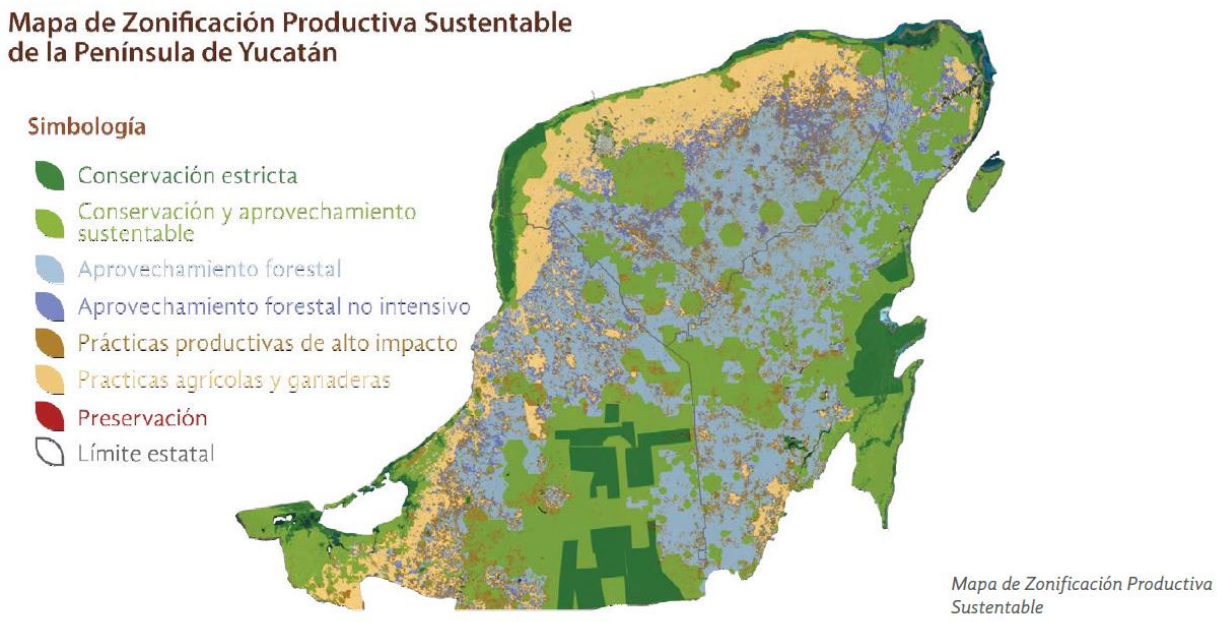

Figure 5.12: Sustainable Production Zoning Areas in the Yucatan Peninsula (Alianza MexicoREDD+ and The Nature Conservancy)

Note. List of areas in order: Strict conservation, Conservation and sustainable exploitation, Forest use, Non-intensive forest use, High impact productive practices, Agricultural and livestock practices, Conservation, and State boundaries.

Additionally, some building and infrastructure categories that are part of coastal areas and small-scale fishing communities are enlisted in the following table.

Table 5.1 Common Infrastructure in Coastal Areas

Architecture Categories	**Types**	**Development and viability links with the tourism and fishing sectors**
Residential	Apartments, houses, lofts, and social housing	Proper shelter and affordable housing for families
Refurbishment	Renovation, extension, adaptive reuse, and restoration of old or abandoned constructions	Decreases the construction of new places and less land use
Cultural	Visitor's centers, science centers, galleries, exhibitions, preservation sites, performing arts center, music venues, libraries, temporary installations	Enhances cultural promotion related with marine activities for locals and attracts visitors

Commercial and offices	For retail (i.e., stores, showrooms, grocery stores, pharmacies, temporary stores, for services (i.e., gas stations), for institutional buildings (i.e., banks), office buildings small shopping centers and markets	Promotes economic development of the community
Hospitality	Restaurants and bars (i.e., restaurants, coffee shops, bars, seafood bars, in-house dining places, food truck spaces), lodging (i.e., cabins and lodges, hostel, hotels)	Accommodates national and international visitors and stimulates the local economy
Public	Government (i.e., municipal buildings, ministry buildings), security (i.e., fire station, police station, emergency services facility, community (i.e., community center and monuments	Provides public services and maintains order
Healthcare	Healthcare (e.g., healthcare center, clinic, medical facilities, dental clinic, retirement, rehabilitation center, asylum, Wellbeing (e.g., spa, sauna), veterinary (e.g., animal shelter, veterinary clinic, research) and laboratory (e.g., marine biology laboratories)	Ensures access to healthcare services and species protection
Educational	Kindergarten, daycare, elementary and middle school high school, universities, and institutes of technology branches	Maintains the education access of different groups
Sports	Recreation and training (e.g., gymnasium, swimming pool, sports field, fitness club	Promotes wellbeing and serve as sport competitions venues that can host foreign visitors

Religious	Worship (i.e., churches, chapels, temples), and burial (i.e., memorial center, cemetery, crematorium, crypts & mausoleums)	Promotes spiritual wellbeing and faith growth, host traditional events of different fishers' celebrations (i.e., La Virgen del Carmen/ patron of the sea)
Industrial and infrastructure	Transportation (i.e., parking, bus stations, ports, boathouses, cruise terminals, rest areas, piers, hangars), bridges (i.e., Pedestrian bridge, vehicular bridge, wineries, factories, workshops, warehouses, barns, energy plants, breweries, greenhouses, stables)	Provides basic infrastructure services for different activities. One example can the warehouses or hangar used to storage boats during hurricanes
Landscape and urbanism	Public spaces, squares, installations, and infrastructures	Promotes cultural events, nature-appreciation activities, and wellbeing of locals and visitors

Elaborated by author

Another point to consider is that housing and infrastructure play a key role in post natural disaster processes (e.g., hurricanes and flooding). Commonly, local, and regional authorities, medical officers and sometimes international aid groups, come to help in critical moments. Still, we must focus on what happens after these third partis leave and focus on infrastructure damage. In the Yucatan peninsula, families, fishers, and tourism-related businesses are the most affected. The fishing activities and tourism programs take time to reactive operations. The capacity of a community to recover in the rebuilding process will depend on economic, cultural, and geographic aspects. Existing infrastructure should be made ready for the type of weather conditions and events that coastal communities encounter every year. If coastal communities lack such infrastructure, some initiatives and plans for community architecture should be implemented. Some aspects to consider are looking at past traditional architecture methods and elements, traditional techniques, and the use of local materials (Nurafaf, 2019).

Finally, it is also important to consider that planning strategies should also be integrated with the main activities that reserves aim to undertake, including conservation, research, environmental education, training, local participation, among others. In this context, biosphere reserves can help to promote conservation of specific sites and its natural ecosystems and

landscapes, as well as identifying areas for sustainable land and resource use (*Strategic Plan for the U.S. Biosphere Reserve Program,* 1994).

5.2.2 Considering New Governance and Participation Models

Strategic planning will require the readjustment and creation of new governance and participation models. Moreover, sustainable governance approaches should be integrated. However, there are different barriers that can limit this path. Barriers for sustainable governance can emerge when there is a lack of understanding of all the complexities that characterize a marine ecosystem (Craig & Ruhl, 2010), some of them are enlisted below.

Table 5.2 Common Barriers for Sustainable Governance

Common barriers	**Implications for Ría (and other communities)**	**Aspects to consider**
Lack of scientific knowledge about marine ecosystems	Unclear goals and long-term sustainability issues	Plans must be developed with science-based information that can help to create best regulations and batter business practices
Some governance measures do not consider the multiple factors and stressors in ecosystems	Some aspects in Ría are being left behind	Measures need to be tailored to the specific context of the location
Ineffective governance with unclear responsibilities and regulations often based on medium- or subject-matter-based strategies→ unclear jurisdiction and enforcement procedures	Unclear regulations that lead to inefficient practices, transparency, unbalanced agreements, justice issues, corruption	Establishment of regulations taking in consideration the different responsibilities and needs of local groups
The various political and social systems among different nations→ the different economic and social needs (e.g., different local development needs and priorities)	The priority of promoting mass tourism in the region and poor attention to small scale aspects	Identify local needs and priorities according to the context
Different levels of capacity among countries towards sustainable governance strategies (lack of institutional capacity)	Unclear goals and lack of direction regarding sustainability strategies leading to ineffective practices in different sectors	Establish stronger sustainability goals, visions, and strategic plans
Unclear definition of property rights in marine resources and lack of	Unsustainable use of resources and habitat degradation	Land use and resources regulations

adequate incentives to control exploitation		
Limited diversification options	Livelihoods pressures, poverty, migration	Identify potential opportunities and market trends
Climate change effects	Hurricanes, flooding, high temperatures	Resilience and emergency strategies

(Ruhl & Craig, 2010)

Governments should then critically analyze and study their regions and identify what needs to be protected and prioritized. Some options to better approach sustainable governance strategies are presented in the next table.

Table 5.3 Basic Principles for Sustainable Governance

Principle	**Characteristics**	**Challenges**
Polluter Pays	The one causing pollution should take responsibility for the harm	To determine: liability, the full extent of the harms, total amount, and who is the real polluter
Use of Best Available Science	"Using science for decision-making, rather than dictating the way of doing science"	The definition of what is the best scientific data or limited and poorly developed information
Precautionary Principle	Acting even when the threats are serious or there is irreversible damage	To determine the statement of the principle (e.g., environment, economy, or equity), who makes decisions, and when it serves pre-determined policy interests
Intergenerational Sustainability	Rational economic behavior and use of resources to preserve future generation's needs. Supports the idea of place-based management to enhance sustainable marine governance	Short-term approaches, individual choices, sometimes strategies cannot bounce us back from scarcity
Transnational Sustainability	Maintaining economic, environmental, and social sustainability among different regions/countries. How actions can transcend among different countries and coastal resources. Establish international	Trade-offs for sustainable governance

	agreements and common goals	
Accounting for Ecosystem Services	Recognizing the diverse ecosystem service values provided by coastal ecosystems	Its incorporation to political and economic contexts, lack of property rights and economic incentives institutional frameworks, how to integrate them because whether they can be considered public and managed by the government or if they are subject to private ownership or existing community management schemes
Integrated Decision-Making	The need for multidisciplinary expertise for a better decision-making modelling	Differentiate "integrated" and "focused", not appropriate where there are existing conflicts
Adaptive Management	Considers the dynamic complexity of ecosystem processes. Relies on "iterative cycles of goal determination, model building, performance standard-setting, outcome monitoring, and standard recalibration". "Management policy thus must put a premium on collecting information, establishing measurements of success, monitoring outcomes, using new information to adjust to existing approaches, and a willingness to change"	Factors regarding costs, authority, public participation, institutions are often not willing to risk with innovative ideas.

(Ruhl & Craig, 2010)

In Ría, many of these principles can be improved or start to be implemented. The government of Yucatan has been working towards more sustainable governance approaches. Their key lines of work seek to strengthen the following: sustainability in food, urban development, clean energy generation, sustainable mobility, green areas development, integrated management of waste, environmental education, and ecotourism (The Yucatan times, 2017). Regarding the use of best available science, extensive research has been undertaken in the area over the last 5 decades. These investigations are very valuable for decision makers.

Expanding in more detail regarding adaptive management, as per the last point of the previous table, the U.S National Academy of Science's National Research Council outlines 8 steps for this principle.

Table 5.4 U. S National Academy of Science's National Research Council Adaptive Management Framework

Adaptive Management Step	Application
Defining the problem	Identify key issues and areas or opportunity to follow a problem-driven iterative adaptation
Determine goals and objectives	Define key desired outcomes
Determine the ecosystem baseline	Science-based relevant data of the site is collected (i.e., species, habitats, and ecological systems)
Development of conceptual models	Design of actions
Selecting future restoration actions and projects	Identify future gaps and further needed work
Implementing and managing actions and projects	Developing the most suitable management strategies
Monitoring ecosystem response	Establish monitoring programs and report performance and effectiveness
Evaluation and proposals for remedial actions or improvements	Revise effectiveness, comparison with desired outcomes and identify areas to improve

(U.S National Academy of Science's National Research Council)

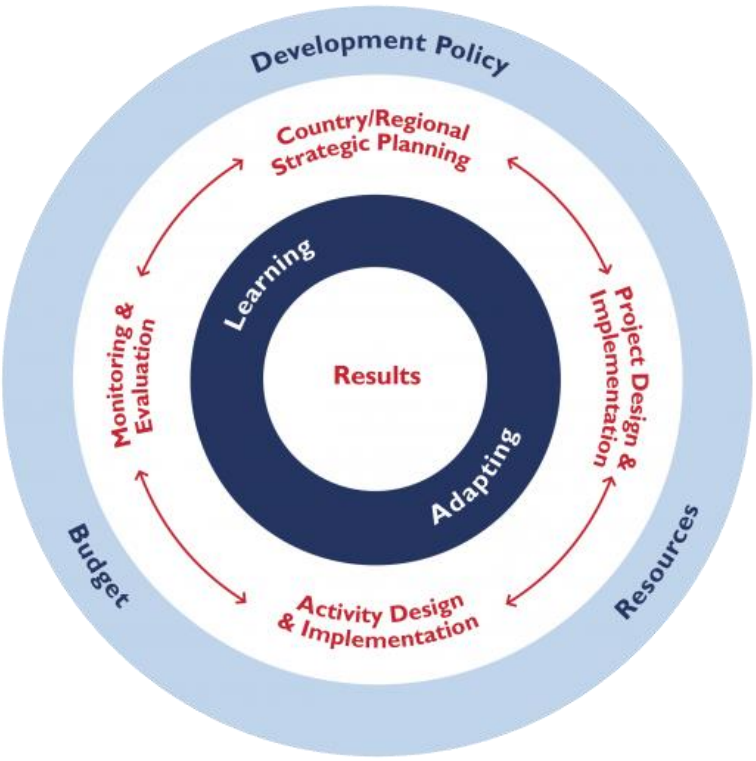

Figure 5.13: USAID Program Cycle (The United States Agency for International Development)

The following section will expand on the relevance of integrated and place-based management strategies.

5.2.3 Integrated, Place-Based Management Strategies

Coastal areas need comprehensive management (ICZM). Sustainable governance strategies need to consider all the interrelations of the components within an ecosystem, taking into consideration: water quality, resources and biodiversity, ecosystem services, land use planning, and climate change (Craig & Ruhl, 2010). One approach can be the creation of place-based management strategies, that can be adapted in marine protected areas (MPAs), the table below expands on its potential.

Table 5.5 Characteristics of Place-based Management Strategies

Characteristics	Limitations
Ecosystem's conservation (e.g., kelp forests, coral reefs, fish species, marine resources), the creation of marine protection policies, encourage marine tourism	Existing jurisdictional problems, lack of scientific research, misunderstanding of the dynamics of the socio-ecological system, generate unintended consequences

(Ruhl & Craig, 2010)

Another framework worth exploring in this section, are the five goals presented by Edward Grumbine in 1994 in his work that analyzed different aspects and themes of ecosystem management. The 5 main goals found in research from different authors prior his publication are as follows:

Table 5.6 Ecosystem Management Objectives

Goals	Statement
Preserve balanced species population in the site	Science-based statements at reducing biodiversity threats
Respect evolutionary and ecological processes	
The representation of all ecosystem types across their natural variations	
Long-term management periods to ensure the species evolutionary potential	
Adapt and accommodate human occupation according to these factors	Highlighting the key role of people's participation

(Grumbine, 1994)

As mentioned, the fifth goal of ecosystem management is to adapt and accommodate human occupation according to the various ecosystem factors. This goal will allow the implementation of projects and strategies that are SES-based and integrating people's participation. One of these options/projects for coastal zones is the FLAG strategy, which will be presented in the next section.

5.2.4 The FLAG strategy (Fisheries Local Action Groups)

According to the Fisheries Areas Network by the European Commission, the Fisheries Local Action Groups (FLAGs) "are partnerships between fisheries actors and other local private and public stakeholders…together, they design and implement a local development strategy to address their area´s needs be they economic, social and/or environmental". They fund projects that can contribute to local development in the chosen area. The strategies can vary among 5 different categories, enlisted in the following table.

Table 5.7 FLAG Strategies and Action Areas

Adding value to fisheries	Diversification	Environment	Governance	Society and culture
Aquaculture	Arts and crafts	Circular economy	Complementary funding	Cultural heritage
Business	Fisheries by-products	Climate change	Fisheries resources	Education and training
Labelling	Gastronomy	Energy	Integrated coastal management	Elderly
New technology	Marine activities	Marine litter	Small-scale and coastal fisheries	Infrastructure
Processing	Pesca-tourism	Water quality		Migrants and refugees
Promotion	Tourism			Women
Short circuits				Youth
Traceability				

(European Commission. Directorate General for Maritime Affairs and Fisheries., 2014)

In recent coastal areas research, the FLAG scheme is considered an innovative and positive solution for more sustainable fisheries. FLAGs have been integrated into a multilevel governance framework of EU fisheries areas. They have been a key tool for the creation and progress of new fishing areas. However, some factors such as the location where they take place and the current governance models are crucial for its development. As the strategies involve the incorporation of actors, territories, and interests, they have required governance arrangements. This has led to a reconfiguration of areas and new ways of spatial planning (González & Piñeiro Antelo, 2020; Piñeiro-Antelo et al., 2020).

The Fisheries Areas Network advises that tourism into fisheries communities should be carefully considered. As mentioned in the previous chapter, if well planned, revenue and tourism-related activities can help to create jobs for people involved in fisheries while also maintaining viable productivity. In the context of fishing sales, tourism can offer a range of activities that benefits it, including direct sales to tourists, promotion of local restaurants, and festivals. In the same way, nowadays tourists are looking into unique experiences different from the usual mass tourism offer (e.g., fishers explaining artisanal fishing methods, tours in classic fishing vessels, or dining traditional seafood recipes at the fisher's homes (Budzich-Tabor, 2014). More in detail, table 5.8 shows a list of other low impact fisheries-related tourism activities.

Table 5.8 Fisheries-Related Tourism Activities

Activities and attraction	Gastronomy	Accommodation
● Pesca-tourism trips ● Working fishing boats ● Watching shellfish gathering or aquaculture ● Activities ● Guided tours of fishing ports ● Interpretation centers ● Watching fishing activities and/or visiting the ● Environment aboard a tourist boat ● Angling trips or angling sites ● Cultural and fish festivals ● Water sports	● Fish restaurants ● Fish frying stands ● Fish shops & markets ● Direct sale of fish from fishing boats ● Gastronomy tourism, including cooking courses	● Accommodation in fisherman's homes ● Hotels with a fisheries theme ● Bed & breakfasts ● Self-catering accommodation ● Campsites

(European Commission. Directorate General for Maritime Affairs and Fisheries., 2014)

The FARNET guide provided a framework for Fisheries Local Action Groups (FLAGs) willing to introduce tourism activities in fisheries communities to ensure benefits and local development for them. The framework is divided into 3 sections described in the next table.

Table 5.9 The FARNET Guide Framework

1. Linking fisheries with the world of tourism: Formulating the FLAG strategy for fisheries-related tourism and developing potential project ideas.	• Analyzing the area: potential links between fisheries and tourism. • Identifying assets for fisheries-related tourism. • Identifying potential positive and negative impacts of tourism development. • Preparing project ideas, involving stakeholders, ensuring linkages.
2. Supporting quality tourism in fisheries areas: Selecting and developing fisheries-related tourism projects.	• Selecting fisheries tourism projects • Developing fisheries-related tourism projects
3. Promoting fisheries tourism: Making a name for fisheries areas and their specific tourism offer	• Promoting fisheries tourism products • Promoting fisheries areas • Promotional tools for fisheries tourism • Example of a promotional campaign

(European Commission. Directorate General for Maritime Affairs and Fisheries., 2014)

Based on this framework, I elaborated on a potential profile of Ría´s communities:

Table 5.10 The FARNET Guide Framework Applied in Ría's Fishing Communities

1. Linking fisheries with the world of tourism: Formulating the FLAG strategy for fisheries-related tourism and developing potential project ideas.
Analyzing the area: potential links between fisheries and tourism: Pesca-tourism activities
Identifying assets for fisheries-related tourism: Biodiversity in the area, species for gastronomy, all-year "summer" season due to the climate of the region (except during hurricane alerts).
Identifying potential positive and negative impacts of tourism development: Positive: ● Diversification of activities ● Cultural promotion ● Revenue and economic benefits for the communities ● Conservation goals Negative: ● Over catch if tourism capacity is not controlled ● The failure to meet the eco-standards in tourism facilities

- Organic contamination and solid waste causing the contamination of water bodies, air pollution
- Soil degradation
- Wildlife disturbance; particularly the flamingos, and other fauna related issues such as turtle nest looting
- The introduction of external fauna, for example, dogs (Castillo et. al., 2015).
- Community conflicts regarding land ownership, management impositions, and power issues (López and Marín, 2010; Liscovsky, 2011).
- Conflicts among fishers and boat operators
- Lack of tourism monitoring and environmental assessment

Preparing project ideas, involving stakeholders, ensuring linkages:

Project ideas: Pesca-tourism activities, particularly those that promote artisanal fisheries practice and cultural exchange with fisher's families

- Key stakeholders: CONANP, CONAPESCA, Government of Yucatan, Ministry of Tourism FONATUR, Pueblos Mágicos Program, CULTUR, BIOCENOSIS, ECOSFERA, INAH
- Research: CINVESTAV, PRONATURA, UADY, CICY, SEMARNAP
- Project Development: SEMARNAP, PRONATURA
- Environmental education: SEMARNAP, PRONATURA
- Management and conservation: CINVESTAV, PRONATURA, UADY, CICY, SEMARNAP, SAHR, Livestock worker's unions
- Tourism: Ministry of Tourism FONATUR, Pueblos Mágicos Program, CULTUR, InvenTur

2. Supporting quality tourism in fisheries areas: Selecting and developing fisheries-related tourism projects.

Selecting fisheries tourism projects:

Pesca-Tourism

Developing fisheries-related tourism projects:

Creating an urban identity among the main streets of the towns for a local architecture style preserving main characteristics (houses, businesses, and historic buildings), fishing decks and marinas refurbishment, maintenance of fishing boats and vessels, the establishment of designated boat tours and walking tours (paths and trails), waste-management programs (especially organic waste from restaurants), training for fishers and tourism operators, eco-certification of businesses.

3. Promoting fisheries tourism: Making a name for fisheries areas and their specific tourism offer

Promoting fisheries tourism products:

All the fisheries-related tourism activities into the categories of activities and attractions, gastronomy, and accommodation, except for water sports, direct sale of fish in fishing boats and campsites.
Promoting fisheries areas: The fishing port of San Felipe, the restaurants, and lodges in Río Lagartos, The pink lakes in Las Coloradas (just for visiting)
Promotional tools for fisheries tourism: Social media, workshops (seafood cooking, marine arts and crafts, painting, dancing lessons in the decks or marinas, landscape photography, etc.) walking and boat tours, seafood cooking fairs, sustainability strategies contests.
Example of a promotional campaign: ● A subcategory of the existing tourism program Pueblos Mágicos (Magical Towns), for coastal fishing towns, in this case Las Coloradas, Río Lagartos and San Felipe. ● A one-day tour between the three communities ● Honeymoon packages

Note. Adapted from European Commission. Directorate General for Maritime Affairs and Fisheries, (2014)

Based on point number 2, there are some existing fisheries related tourism projects in Yucatan and in Ría's towns. Some collaborative initiatives are trying to set a new scenario for tourism, with sustainable community-based approaches and integrating the fishing sector. One of them is Co'ox Mayab. Co'ox Mayab is a social enterprise that works with 10 groups of cooperatives in Mayan communities throughout the state of Yucatan and they are currently and actively developing tourism service projects. They do recognize tourism as an opportunity to generate a greater economic spill in their communities, raise awareness about the importance of the environment and the importance of preservation. Most importantly, they are joining efforts and willing to support cultures that have been disintegrated, as happens in many indigenous groups.

Figure 5.14: Co'ox Mayab Marketing Flyers for Río Lagartos and Pujula Aldea Maya (Co'ox Mayab)

Their projects include a variety of activities, not only touristic but also as immersive experiences, cultural promotion, and educational purposes. Some of them are enlisted below:

- Boat tours
- Birdwatching
- Honey production process demonstrations
- Mayan hammock workshops
- Sawmill visits
- Artistic murals walking tours
- Bike expeditions
- Stone oven bakery demonstrations and workshops

In San Felipe, some of the initiative's projects are specialized in sport fishing tours. In addition to the traditional boat tours around the area, there is the option to take a special ride with fishers. On this trip, like pesca-tourism in Italy, fishers in San Felipe share their work and fishing activities with interested tourists. In addition, you can choose a traditional homemade seafood dish to eat on board, such as ceviche.

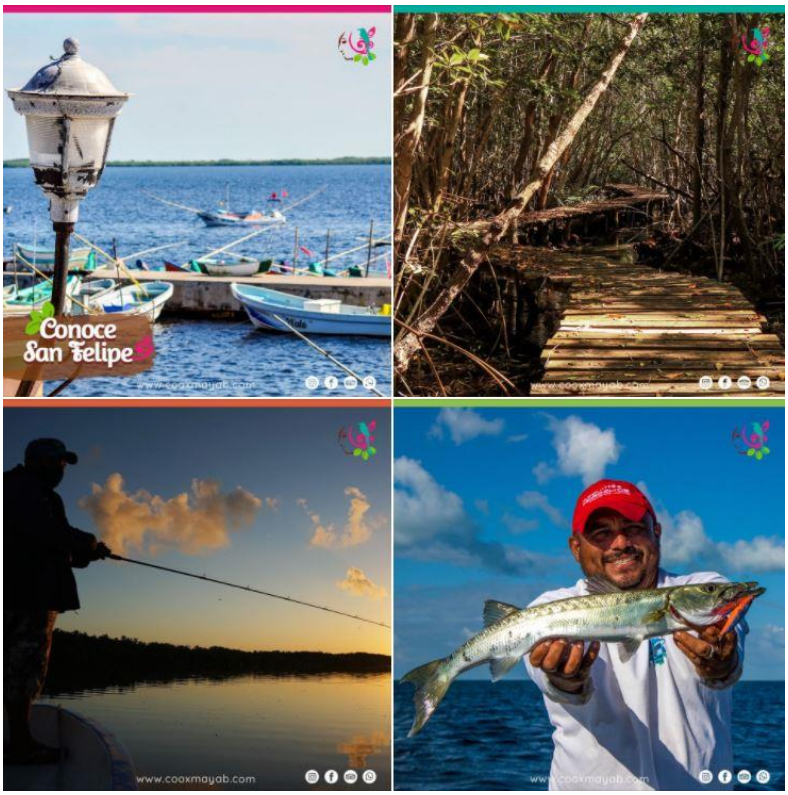

Figure 5.15: Co'ox Mayab Fishing Tour Marketing Flyers for San Felipe (Co'ox Mayab)

5.2.5 Yucatan's Development and Tourism Agenda According to SDGs 2030 (Programa Especial de Turismo 2018-2024)

One of the main challenges facing government institution in Mexico is to link, in an effective way, planning with policy implementation. Over the last few years, the state of Yucatan in Mexico has been nationally and globally recognized for its efforts towards a greener and more sustainable economy (Fridman, 2019). Furthermore, government initiatives have progressively managed to overcome extreme poverty, by generating jobs according to local knowledge and geographical attributes. Many of them are related to the prominent tourism market of the Peninsula region due to its extensive biodiversity and cultural heritage. However, Yucatecans are demanding authorities that community rights and participation should remain on top of all private interests. Also, some tourist attractions and rural communities still have low diffusion and unsustainable practices remain, while local voices are still poorly entrenched (Vila et. al., 2018).

In response to this, the most recent development plan launched in 2018, has put citizens at the center of each decision-making process. Similarly, it has established the respect and valuation of the environment as a key condition for economic, political, and social development. Additionally, it has integrated basic principles of commons resources management with specific objectives and action plans for a medium and long-term period. The Secretariat of Tourism Development of Yucatan is one of the strongest government ministries in Mexico, they have developed very complete and integrative plans. However, effectiveness and emerging challenges will become known gradually, in the next years, as these plans were recently launched.

One good example of tourism planning is the case of the Republic of Palau, an island country located in the western Pacific Ocean. Palau's authorities put together efforts to develop a new Strategic Tourism Plan, launched in 2017. In this document, rather than supporting mass tourism and budget-oriented tourism development, they focus on boosting markets based on ecology, sports and weddings to provide a unique and nature-based experience. Nature conservation and good resource management are their main values. This island has been getting people's attention because, beyond promoting its new values to their people, they make future visitors environmentally conscious before they even arrive. For example, this island makes visitors sign a nature compromise in their visa applications, agreeing to green fees.

Other developing countries, including Mexico, Costa Rica and India have also embraced it as a path for economic development and as a driver for conservation (Tuğba Kiper ED1 - Murat Özyavuz, 2013). As previously mentioned, the state of Yucatan is one of the leading provinces that has already done significant efforts to develop a plan to implement similar strategies, but as its plans were recently launched, effectiveness and community acceptance is still to be evaluated.

In general, there is a wide and varied tourism offer based on many natural and cultural resources of great value and uniqueness. The main characteristics that make Yucatan a competitive tourism destination are:

- The jungle is the dominant vegetation
- A warm climate during all seasons
- 378 km of coastline

- Protected Natural Areas including Biosphere Reserves (including the study area of this thesis), national parks and sanctuaries, many cenotes, grottos, and caverns
- The geographical location within the Yucatan Peninsula along with the states of Campeche and Quintana Roo

At a national level, Mexico has been working towards making contributions to the Sustainable Development Goals. This was stated at an annual meeting in the fields of sustainable fisheries and climate change, and Yucatan is at the forefront in supporting this path. One of the most important actions that Yucatan's government has done until now, in collaboration with Campeche and Quintana Roo, was the creation and the unanimity of The Yucatan Peninsula Sustainability Agreement (ASPY 2030) in 2016. This agreement contains key areas to support including sustainable sectors, ecosystem conservation, sustainable coastal zone management, and responsible markets.

Moreover, not only government and ministries are involved in this compromise, but also private businesses (agriculture, food, tourism, infrastructure, and natural resource extraction sectors) and post-secondary education institutions. Most importantly, in the context of policy and planning frameworks, the ASPY 2030 aims to progressively create jurisdictional-scale conditions. This will be done by creating administrative guidelines that consider possible stakeholders' steps, to create more integrated development strategies. The following diagram summarizes the sections that were stated in the document, it proposes that they need to occur in a mutually supportive process, which is a key factor in the processes of community-building.

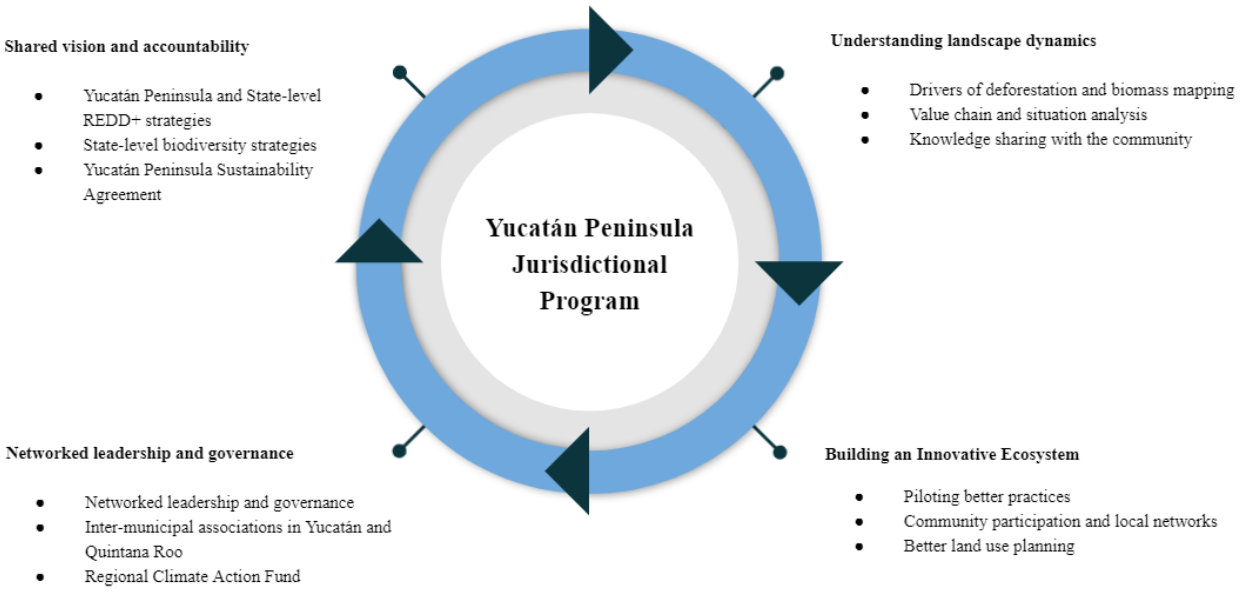

Figure 5.16: Critical building blocks of ASPY 2030. Note. Adapted from The Yucatan Peninsula Sustainability Agreement (2016)

Consequently, following the same approach, The State Development Plan of Yucatan was released in 2018, which will be in force until 2024. In this document, a general goal of creating a better future for the citizens is described. It seeks to improve situations of poverty, inequality, and the exclusion of opportunities.

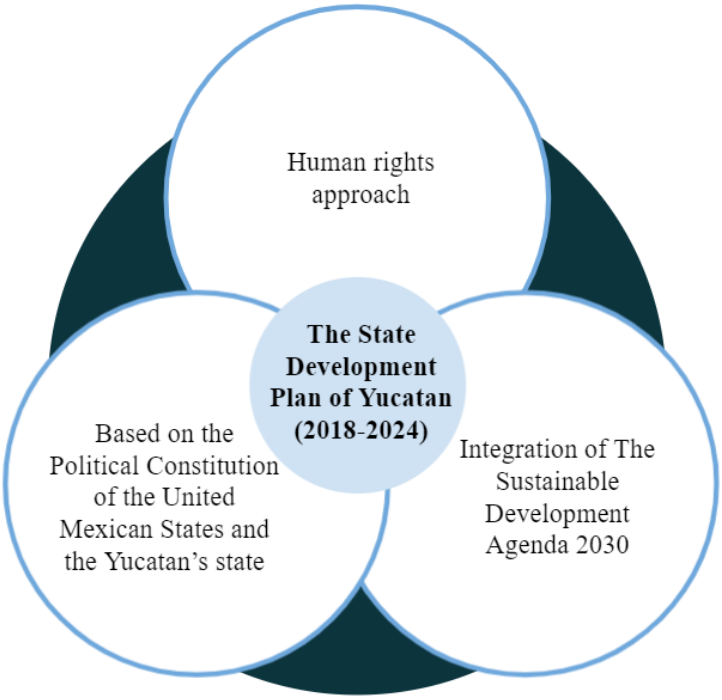

Figure 5.17: The State Development Plan of Yucatan Foundation. Note. Adapted from The State Development Plan of Yucatan (2018)

The main goal is focused on keeping Yucatan as a strong economy. "Yucatan was positioned in the first quarter of 2019 as the third state nationwide with the highest economic development, with 3.1 percent growth, which is almost eight times higher than the average of all states in the country that was 0.4 percent, according to the Quarterly Index of State Economic Activity (ITAEE)" (The Yucatan Times, 2019). With a more integrative vision, strategies aim to generate modernity, investment, and respect the economic, social, cultural, and environmental rights of the Yucatecan people. The 4 main sectors that define this plan are 1) Inclusive Growth, 2) Livelihood and Well-being, 3) Strong Cultural Identity and 4) Sustainability, further expanded in the diagram below. To achieve this vision, the following strategies were established:

- A budget alignment of public programs with a long-term vision
- Strengthening strategic collaboration schemes with the private sector by following state policies
- The establishment of a system of indicators that allows monitoring and evaluation of every implemented action

01	Inclusive growth	• To allow people being able to work in every activity that the state promotes, therefore contributing to the economic development of Yucatan.
02	Livelihoods and wellbeing	• It prioritizes the dignified life of every citizen by reaching the satisfaction of the basic needs.
03	Strong cultural identity	• It seeks to guarantee that people and communities have access to culture and create conditions of equality, human dignity and non-discrimination.
04	Sustainability	• To regulate human activities regarding the use and exploitation of natural resources, ensuring their natural integrity and thereby promoting sustainable economic development.

Figure 5.18: The 4 Action Lines of The State Development Plan of Yucatan. Note. Adapted from The State Development Plan of Yucatan (2018)

Furthermore, specific tourism objectives were outlined, to promote a more inclusive economy and explore the potential of the tourism industry. The document describes 4 main strategies and each of them outlines specific strategies and actions accordingly, all of them with the main objective of increasing the value of sustainable tourism products and services in Yucatan. They are as follows:

1. Promoting sustainability-oriented education and training of tourism services providers in the state:

- To connect the tourism business sector with educational institutions and organizations that provide training and workshops to ensure certified professionals and promote the development of skills in the operations
- To promote the creation and design of new sustainable tourism projects and initiatives
- To support the creation of new products and sustainable innovative tourism services
- To identify potential niche markets that may have a high demand in the region
- To promote strategic partnerships with the private sector at a national and global scale

2. Creating marketing strategies that promote the image and tourism attractions of the state on both a national and global scale:

- To encourage state participation in national and international tourism promotion events
- To promote the image of Mayan culture in national and international promotion campaigns
- To organize tourism promotion campaigns through different national and international media
- To use the social media and electronics tools for marketing purposes and interaction with the visitors and citizens
- To create more air routes that connect to strategic places
- To establish partnerships with the municipalities to improve the tourist image of the state
- To improve the quality and diversity of local products and services

3. Strengthening the existing and potential tourism market niches:

- To restore the service infrastructure for sustainable tourism
- To establish the nature tourism segment in tourist municipalities
- To launch comprehensive actions to host national and international congresses and conventions
- To design marketing programs and tourisms branding for products and services for luxury tourism
- To facilitate the provision of sustainable tourist mobility services
- To strength the development of tourist centers in areas with high cultural heritage
- To promote the offer of all the existing and potential tourist segments with a particular focus for each of them
- To encourage Yucatecans to consume local products and tourist services inside the state

4. Improving the quality of the state's tourism products and services:

- To promote the celebration of international festivals, exhibitions, and tourist events
- To modify the main tourist spots and make them more modern, accessible, and inclusive
- To adapt the tourist infrastructure to the new demands and needs of the market, emphasizing accessibility
- To rescue spaces with high tourist value for national and international visitors

- To design digital tools that facilitate the promotion of tourist attractions
- To coordinate tourist and gastronomic events among municipalities in collaboration with the public, private and social sectors
- To promote local fairs and traditional events in towns that have high tourist potential
- To develop alternative and community tourism
- To facilitate access to the population in vulnerable situations to tourism activities
- To establish new sustainable tourist routes in the communities respecting their cultural identity
- To prioritize the support for artisans, merchants, and local tourism, and the food industry in national and international fairs and special tourism events

There is no doubt that the Yucatan government has made significant efforts to promote sustainable development in the state, and their plans have integrated different goals to benefit different sectors. Their agenda is complex and there is a long way to go. However, their proposed objectives are well-founded and the collaboration between public and private actors is going to be essential for the completion of their goals. New approaches to sustainable development, tourism, and community-based initiatives require collective action and they must be ruled by special policies and guided by specific organizations trained for each field.

5.3 Chapter Summary

Fishing activities should be incorporated into an intersectoral ecosystem-based approach for marine resource management (Molina, 2013). With the review of all the different options mentioned throughout this chapter, it is possible to find and combine the most suitable and viable strategies in a region.

It is important to consider that the traditional tasks of fishers can be expanded. They play a major role in providing information on the state of marine resources, along with monitoring and responding to environmental pressures and impacts. As a result, their work will be based in conservation approaches. In the same way, community participation plays a key role during the planning processes and operations. It is very important to build inclusive dialogue among different stakeholders and the different collaborators that parties to the processes. This will provide a bigger picture of the needs and challenges that need to be addressed. People who live

in the region and whose livelihoods depend on it have the deepest understanding of what is needed in future, which makes their voices even more important in the process of vulnerability of viability.

CHAPTER 6:

Conclusions and Recommendations

6.1 Introduction

Coastal and marine areas around the world are facing difficult circumstances and increasing stress because of various pressures such as demographic changes, political decisions, unsustainable practises, and the effects of climate change. As a result, they are more vulnerable, and they are struggling to find viable solutions. The fishing industry, particularly the artisanal fishing industry, is in an extremely complicated situation. This scenario has resulted in a decline in this sector and biological issues with its resources and species. Moreover, it concerns that fishers have decided to abandon this activity and that opportunities to pass on knowledge to preserve future generations are at risk of being lost. Furthermore, two-thirds of the world's fish catch, and other marine species are highly dependant on coastal wetlands, but most of these ecosystems are in environmental danger (Gilbert, J. &Vellinga, P., 1994).

The development of fishing-related tourism activities, based on the sustainable use of marine resources, is recognized as an effective strategy and a complementary economic source but also a source of new employment for coastal areas and a funding source for habitat restoration. However, the successful implementation of it will largely depend on ecosystem and community-based strategies guided by innovative management schemes. The strategies presented by policymakers, related professionals and key participants must be science-based, with a comprehensive review and recognition of the complex interactions between human social systems and ecological systems that encompass coastal and marine resources. Furthermore, because different activities frequently occur in the same location, strategic and planning models that integrate metrics and spatial boundaries between ecological and social systems must be more aligned and consistent to better achieve the goals of socio-ecological frameworks and improve coastal and marine management (Refulio-Coronado et al., 2021).

This thesis presented data and options for community-based tourism for a particular case study showcasing tourism niches for diversification options for fisheries, not only for alternative income but also with the main goals of providing resources and opportunities for ecosystem balance and habitat restoration actions. Most importantly, to have in mind that tourism niches in the fishing context are not meant to only promote or show what fishers do, but with the meaningful and driven-purpose objective of protecting this sector, preserve traditional knowledge, protect species, and enhance the labour and livelihoods of all the direct and indirect workers on this sector, and the families that depend on it.The following sections will provide a summary of the key findings and reflections on the three objectives of this research.

6.2 Summary Objective 1

> "To examine and understand the extent of tourism and the nature of the small-scale fisheries in Ría's communities (El Cuyo, San Felipe, Río Lagartos, and Las Coloradas)"

For many years, the resource abundance in the Yucatan Peninsula has opened opportunities for different economic sectors in the region. In RLBR and its neighboring communities the main ones are agriculture, fishing, livestock, salt industry and tourism. Particularly, fishing and tourism play a key role in the economic development of Ría. The small-scale fishing sector of Ría's towns have provided families for many years, and in despite of some existing pressures in the sector, there is still a good number of fishers registered. There is still a positive panorama for the conservation of this activity. On the other hand, tourism started to become more popular in the 1990's. Ría's biodiversity has attracted international visitors that usually arrive to Merida and Cancun, but with low-impact tourism niches. Nonetheless, these practices have resulted in complex situations in Ría's SES. The table below summarizes the key characteristics of both sectors in Ría's towns.

Table 6.1 Summary of Key Characteristics of Fishing and Tourism in El Cuyo, San Felipe, Río Lagartos, and Las Coloradas

	Fishing	**Tourism**
Date	300-500 CE- now	1967- now
Groups/Types of participants	Cooperatives, temporary fishers, permit holders and independent fishers	Local business owners (hotels, restaurants, tourism agencies) fishers, community members, community initiatives, and external tourism agencies.
Resources/Products	Red grouper, octopus, spiny lobster, shark, shrimp, mojarra, snook, trout, snapper, amberjacks, little tunny, king mackerel	Biodiversity and culture
Related activities and sub-niches	Recreational fishing, and aquaculture	Ecotourism, sports fishing, gastronomy
Consumers	Self-consumption, local, national, and international	Local, national, and international
Seasons	Depending on closing seasons main: red grouper (February-March), lobsters (March-June), shark (May-June), octopus (January-July)	All year, with a high demand during the summer. Affected between June and November during the hurricane season
Key Institutions	CONAPESCA	Government of Yucatan, Ministry of Tourism
(As part of Ría Lagartos Biosphere Reserve)	CONANP, CONAPESCA, Government of Yucatan, Ministry of Tourism, Pueblos Mágicos Program, CULTUR, BIOCENOSIS, ECOSFERA, INAH, RAMSAR, UNESCO, CINVESTAV, UADY, CICY, SEMARNAP, PRONATURA	

6.3 Summary Objective 2

"To analyze the key contributions of and adverse impacts from tourism practices on Ría's communities"

Tourism has significantly enhanced economic development and culture promotion among Ría's communities, but it has also been a drive for negative economic, social, and environmental

outcomes aspects of the socio-ecological systems of the region. The diagram below summarises both aspects of this practise, with a particular emphasis on the effects on Ría's SSF.

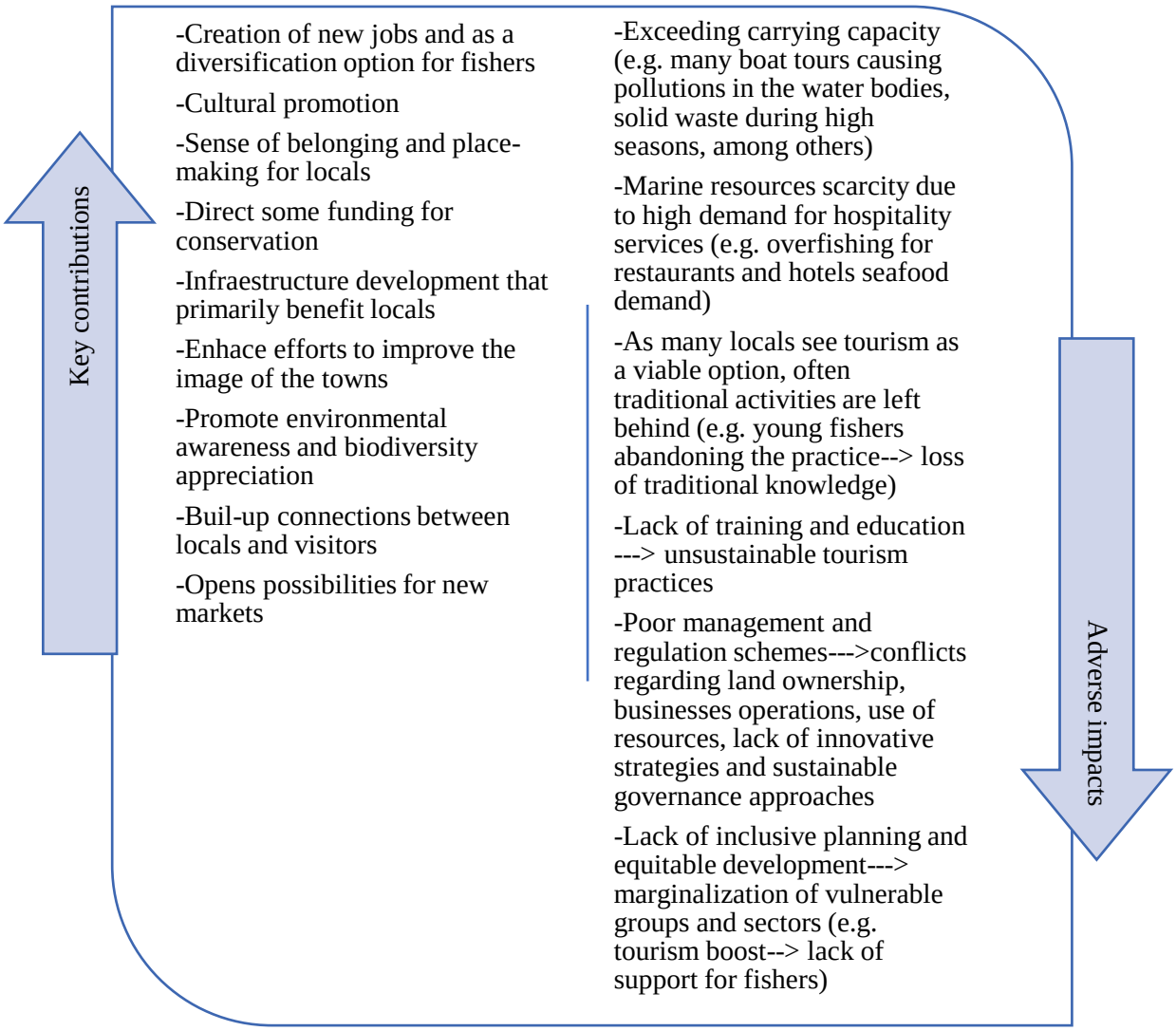

Figure 6.1: Key Contributions and Adverse Impacts of Tourism on Ría's SFF

6.4 Summary Objective 3

> "To explore strategies for successful community-based tourism planning for fostering a transition to viability in Ría's small-scale fishing communities"

Once having a complete profile of a place, the characteristics of its socio-ecological context, identifying its strengths and problems, it is necessary to define the best way to address its challenges and set the path for viability. It is important to set a collective vision with the best strategies and goals with innovative ideas that can foster job growth, environmental preservation, community wellbeing, and maintain this "stability" for the upcoming years. Although there is no specific solution, the overall goal is to create a framework that integrates intentional growth, sustainable principles, and that can be adaptive over time, according to the short-term results and goals accomplished, demographic changes, market trends, among other factors. The table below summarizes the frameworks that are feasible to analyze and implement in the aim to make the transition from vulnerability to viability in small-scale fisheries communities, but also in other contexts.

Table 6.2 Summary of Options for Viability in Ría's SFF

Strategies/Frameworks	Relevance and summary of pros and main opportunities	Contribution to V2V to Rías's SSF
Community Economic Development and Strategic Planning	Activate the local economy, improve livelihoods, mobilization of local resources to meet local needs, revenue inside the community, promote stakeholders and community participation, promote local culture, establishment of innovative and collaborative goals with multi-disciplinary views, integrate urban design aspects that improve infrastructure for both tourism purposes, but most importantly for the locals→appropriate land-use planning, more livable places, environmental-based strategies, enhance the waterfront image, preserve key marine infrastructure and fishing facilities, public buildings for emergencies and shelter in natural disasters	Enhancing wellbeing, economic prosperity, job creation, wise use of resources and spaces, human health, and safety, creating a sense of belonging and place-making, promoting equity, and building resilience

Considering New Governance and Participation Models	Following basic principles for sustainable governance (e.g., polluter pays, best use of available science, precautionary principle, intergenerational and transnational sustainability, accounting for ecosystem services, integrative decision-making, and adaptive management)→ adaptive management for learning and adaptation processes	Fostering ecosystem conservation, promoting research and data-driven decisions
Integrated, Place-Based Management Strategies	Integrated and place-based strategies with science-based guidelines adapted to human needs	Creation of solutions tailored to the specific context and needs of a community and its resources, creation of marine protection regulations and policies.
The FLAG strategy (Fisheries Local Action Groups)	The creation of partnerships and project development in marine and coastal locations for the promotion of fishing and tourism, based on the specific strengths, market trends and opportunities of each context	An umbrella of opportunities for businesses and develop projects based on fisheries and tourism under 3 main categories: activities and attractions, gastronomy, and accommodation, aiming to create collaborations between the two sectors and other participants, provide unique experiences and quality services with the main goals to benefit the community and strengthen the fishing sector
Yucatan's Development and Tourism Agenda (Programa especial de Turismo 2018-2024)	Consider past and existing planning schemes and adapt new strategies with innovative visions. How the main action lines of state plans (inclusive growth, livelihoods and wellbeing, culture, and sustainability) are narrowed down to specific goals and sectors	The integration of community-based and sustainable strategies that aim to foster community economic development. Most importantly, the specific sustainable approach in tourism practices and attention to vulnerable sectors of the community

6.5 Research implications and Recommendations

The analysis made on this research can serve as a reference and framework for other coastal and marine areas and small-scale fishing communities where tourism is already part of its economy or may be considered in future. Findings on objective 3 do not present a specific project to develop in Ría's communities. Instead, after understanding the complexity of the region and looking of the "big picture" of its socio-ecological context, I aimed to provide key aspects for a framework plan and layout ideas that can be crucial moves for its economic development and viability with tourism and sector as the main drivers. Then, ideas can be further exploring into particular projects and be part of long-term vision strategies.

If tourism is chosen as an option for viability in small-scale fisheries, therefore is necessary to identity barriers and limitations for the development of it and propose key action lines ahead. In the same way, note that trends and needs are constantly changing and evolving, so it is necessary to vision goals with a dynamic and inclusive approach tailored to each location. In the same way, it is important to stay up to date in market-based trends.

Regarding pesca-tourism projects, aside from assessing the fisher's and community perception of these practices (such as identifying interests, concerns, capacities, and resources for implementation), the following are key aspects for designing, launching, and developing pesca-tourism activities, based on other projects that have been developed in various European countries.

1. Identify the nature of the tourism market
2. Estimate demand
3. Define the products and offers
4. Establishing management and marketing schemes
5. Distribution and communication channels
6. Analysis of revenue
7. Capacity building, training, and education
8. Financial aspects
9. Social and environmental sustainability

Similarly, another important factor to consider when collaborating among different groups to develop fisheries-related tourism projects is the responsibilities and roles that the participants should take on. Beyond these particular projects, this aspect is crucial for better effective ecosystem management. Figure 6.1 enlists the key main responsibilities and implications for main groups involved.

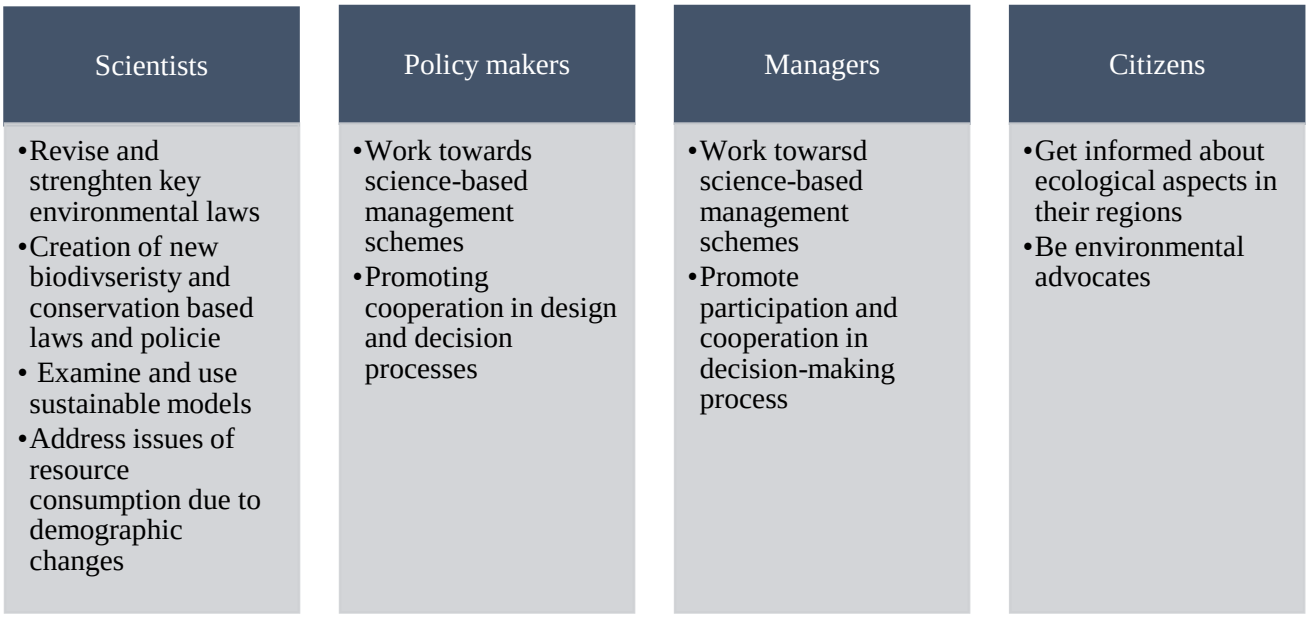

Figure 6.2: Roles and Responsibilities Among Groups for Ecosystem Management (Grumbine, 1994)

The same author also recommends special attention to the points enlisted below.

- Reframing environmental values: understand how humans perceive and value nature elements and ecosystems services
- Encouraging cooperation: avoid competitiveness over decision making among decision-makers, transforming participation based on shared interests, common goals, and biodiversity advocacy
- Evaluating success: ecosystem management assessment and monitoring methods based on environmental protection

6.6 Concluding Remarks

Small-scale fishing communities have distinct socio-ecological conditions and face a variety of challenges that demand special attention. Their challenges are associated with various drivers and factors, and each of them must be effectively addressed in order to achieve better results in the future, for the people, resources, and environment. This thesis particularly focused on viable option that can open a variety of opportunities to address different problems, that is, tourism and its linkages to fishing communities. If effectively planned and implemented, and in combination with different planning guidelines, management schemes and government actions focused on the people and environment, can lead to viable and more sustainable scenarios in the short, medium, and long term. Each framework can work different according to the location, so strategies should be particularly tailored, analyzed, and monitored based on the needs, changes of each SSF case study or coastal/marine contexts.

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